

# ECHO IRELAND

IRISH RADIO TRANSMITTERS SOCIETY

Spring 2020 Celebrating 88 YEARS



## *Coolmine Rally, 16th February 2020*



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**IRTS Committee Members  
2019/20**

President: Jim Holohan EI4HH  
Vice-President: Pat O'Connor EI9HX

**Committee**

Michael Goss EI2JM  
Harry O'Loughlin EI2KL  
Steve Wright EI5DD  
Robert Brandon EI5KH  
Dave O'Connor EI6AL  
Gerry Gervin EI8CC  
Brian Canning EI8IU  
John McCarthy EI8JA  
Tom McDermott EI9CJ  
Larry McGriskin EI9CN  
Declan Horan EI9FVB  
Paul Raftery EI9HQB

### IRTS Past Presidents

1932	M. Dennis	EI2IB
1933-1936	J. Smyth	
1937	H. Duncan	EI6B
1938	H. Hodgins	EI5F
1939-1956	T.D. O'Farrell	EI6F
1957	Thomas Green	EI9N
1958-1960	M.E. Folan	EI6W
1961-1963	H.L. Wilson	EI2W
1963-1964	Ambrose MacNamara	EI8A
1965-1966	S. Merry	EI3B
1966-1967	W. McIlwaine	EI9F
1967-1968	A.C. Woods	EI3L
1968-1969	Leo P. Purcell	EI6D
1969-1970	Seamus Rossiter	EI7R
1970 – 1971	Bryan Fogarty	EI6X
1971 – 1972	A.D. Patterson	EI4BC
1972 – 1975	Eoin O'Kelly	EI6BX
1975 – 1977	Con Hunter	EI9V
1977 – 1979	Sean Nolan	EI7CD
1979 – 1982	James Upton	EI8Z
1982 – 1985	Tom O'Connor	EI9U
1985 – 1987	Michael Staunton	EI3DY
1987 – 1989	William Barron	EI6BUB
1989 – 1991	Con Hunter	EI9V
1991 – 1994	Tom Rea	EI2GP
1994 – 1997	Jim Ryan	EI3DP
1997 – 2000	Paul O'Kane	EI5DI
2000 – 2003	Dave Moore	EI4BZ
2003 – 2006	Sean Donelan	EI4GK
2006-2009	Finbarr Buckley	EI1CS
2009 – 2012	Paul Martin	EI2CA
2012 – 2015	Séamus McCague	EI8BP
2015 – 2018	Gerry Gervin	EI8CC
2018-Present	James Holohan	EI4HH

### IRTS Shop

IRTS Members can avail of a 10% discount on purchases from the RSGB on-line shop - [rsgbshop.org](http://rsgbshop.org). Members should select the “*Non-member's Price*” before placing the order and then enter the IRTS Discount Code during the checkout process. At this point the discount will be applied.

IRTS members who are also RSGB members should continue to select the “*RSGB Member's Price*” and not use the IRTS Discount Code. The current IRTS Discount Code is **IRTS2020XWW**— it will change from time to time. [www.rsgbshop.org](http://www.rsgbshop.org)

### Radio News Bulletins and Readers

#### Sunday

National	1100	7.123	SSB	Joe EI6EG
Dublin	1145	145.525	FM	Tony EI5EM
				John EI7JG
				Frank EI6EF
				Liam EI3HK
National	1200	3.650	SSB	Eddie EI3FFB
Mayo	2100	145.600	FM	Padraic EI9JA
				John EI7FAB
				Jimmy EI2GCB
				John EI8GIB
				Dominic EI9JS

#### Monday

Cork	2000	147.750	FM	Vincent EI7HN
Limerick	2000	145.750	FM	Brian EI9AL
				Simon EI7ALB
				John EI5HDB
				Harry EI2KL
Louth	2000	145.675	FM	Anthony EI2KC
				Jim EI2HJB

#### Tuesday

Waterford	2130	145.650	FM	David EI6GVB
				Sean EI2HZB
				Mark EI7IS





# News from around the Clubs

## Lough Erne Amateur Radio Club Rally



**7th June at 11.30**  
**SHARE Centre,**  
**Lisnaskea, Co. Fermanagh BT92 OEQ**

- Free parking
- Bar
- Café
- Cooked lunch
- Free tables for trade
- Special interest– shack clearance etc.
- RSGB sales stalls
- Free Bring & Buy
- Raffle included in entry price
- SHARE is disability friendly

**Entrance fee: €5 or £5**

For updates visit the club's website [www.learc.eu](http://www.learc.eu)

145.7375MHz 110Hz CTCSS 1750HZ tone. The Fermanagh Repeater, GB3CP is owned and maintained by Lough Erne Amateur Radio Club GN0LEC and is funded by the club as a service to members and to all radio amateurs and experimenters in Northern Ireland and nearby counties of the Republic of Ireland. The NoV was issued in January 2009. our Repeater Keeper is Raymond Ashe GI8RLE whom we elected an Honorary Member to mark his good service to the Club, our repeater and amateur radio. Reports of coverage etc. to Herbie GI6JPO [repeater@learc.eu](mailto:repeater@learc.eu)

## Limerick Clare Radio Club Rally

**15th March at 11.00**  
**Radisson Blu Hotel & Spa**  
**Ennis Road,**  
**Limerick V94 YA2R**



To book a table contact Michael EI2IX

## Cork Radio Club



Cork Radio Club meets monthly, generally on the third Wednesday, in the Community Centre, Carrigtwohill.

The Club plans to run classes for the Amateur Station Examination and the following are the details:

**Enrolment night:** Wednesday January 22<sup>nd</sup> 2020

**Enquiries to:** Dave EI4BZ on 087-6290574  
email to [info@corkradioclub.ie](mailto:info@corkradioclub.ie).

## Shannon Basin Radio Club



This is a bit on the Autumn 2m and 70cms contests, I am waiting for a few pics from the field day and I will send the article on that as soon as I have the pictures.

On Sunday morning on the 15<sup>th</sup> September Craig EI3FW, Anthony EI6GGB and Brian EI8IU headed for Cairn Hill in Longford. Weather wise it wasn't bad with a light drizzle falling.

We drove to the summit which is 278 M and set about getting the station set up. We were then joined by Tom EI4HCB just in time to help.

It was the first time that we would be using a new Diamond X510 which was bought just for these contests.

All was set up in the luxurious surroundings of the back of EI8IUs van which was at least dry.

The generator was started and the Icom IC910 connected to the antenna and turned on. All SWR readings were fine so we gave a few calls to test signals. We were given good reports so we were ready for the serious business of the contests!

Conditions on 70CMs were fair and we had 14 QSOS in 9 counties, 2M was more active with 33 QSOs in 16 counties.

The antenna proved to be very successful as we won both the 70cms and 2m high power portable contests. We look forward to Easter Monday for the Spring contests and hopefully the antenna will once again be successful.

*Brian Canning EI8IU*

## News from around the Clubs

### Tipperary Amateur Radio Club

On Tuesday 21st January last the Tipperary Amateur Radio Group held its AGM at the Clonmel Park Hotel. The meeting was well attended with members travelling from neighbouring counties. Chairman Andy EI5JF opened the meeting and the minutes from the previous AGM were read and approved. Club treasurer Tommy EI2IT presented the financial status of the club which was in healthy order. A number of administrative items were dealt with and ratified. The committee for the forthcoming year was elected which was as follows: Chairman Andy Jay EI5JF, Vice Chairman Brian Kelly SWL, Secretary John Ronan EI7IG, QSL Manager Paul Norris EI3ENB, Treasurer Tommy Hallinan EI2IT & PRO Ronan Daly EI4KN.

The Club also extends its best wishes to our vice chairman Brian on his upcoming wedding. New members and SWLs in particular are always welcome to come along to any of our meetings. Further information can be found on [www.ei7trg.ie](http://www.ei7trg.ie)

Ronan Daly EI4KN

### IRTS QSL Service “Special Event Call Signs”

The outwards and inwards QSL service is available free to IRTS members, whether individuals or clubs, for their own call and for special event stations licensed to them. The service is also available free to JOTA stations, irrespective of whether an IRTS member is the licence holder. Operators of special-event stations should supply details to the relevant incoming QSL Manager listed on [www.irts.ie](http://www.irts.ie) and on the inside front cover of *Echo Ireland*.

### Publications Library

Members are reminded that the IRTS web site has a *Publications Library*, where scanned copies in PDF format of old IRTS publications, principally newsletters, as far back as 1948 are available. This Library forms an important digital record of past society activities.

We encourage members to search for old IRTS publications that are not already on the site and send them to Joe EI7GY for scanning.



### “Echo Ireland” the Journal of the IRTS

The Irish Radio Transmitters Society, is published quarterly. The Society also publishes **EiNews** - a monthly newsletter. Private advertisements from paid-up members are published free of charge.

Articles and event information for publication are welcomed. Send your manuscript to [newsteam@irts.ie](mailto:newsteam@irts.ie) as a word-processing file attachment, **not as a PDF**. Please do not attempt to format the document to look like a printed page. Images and illustrations should be embedded in the file *for position only*. If you do not also send your images as separate high-resolution files, they will not be used. Make sure to put captions for all images and illustrations at the end of the article, rather than embedded within the images or the main text of your article. Please include the full names and call signs of people included in photos and where necessary obtain their permission.

All material published is subject to editing for length, clarity, style, repetition, exaggeration, spelling, punctuation, grammar, legality and taste. Permission may, on their request, be given to other societies to reproduce articles. Matter published or opinions expressed in either publication do not necessarily reflect the opinions or policy of IRTS.

### Echo Ireland Summer 2020

Copy deadline - **1st June**  
Articled to [newsteam@irts.ie](mailto:newsteam@irts.ie)

### EiNews Appeal

EiNews is an ideal channel in which to publicise for clubs. It includes Echo Ireland, the weekly Radio News script and this newsletter and requires input from members to be successful. Please share information about past and future events or achievements with other members by Emailing short pieces (with photographs and links) to [newsteam@irts.ie](mailto:newsteam@irts.ie)



**IRISH RADIO  
TRANSMITTERS SOCIETY**  
Since 1932



## Contest News

Joe Ryan EI7GY [contestmanager@irts.ie](mailto:contestmanager@irts.ie)

### Field Day Contests

Although the summer of 2019 seems like a long time ago, I want to start by covering the three field day contests held in the summer months – separate contests for CW, VHF/UHF and SSB, respectively. The IRTS field day contests run at the same time as similar contests in other IARU Region 1 countries, so multipliers are readily available and, similarly, the EI multiplier is much in demand. While interest in these contests in EI has been low for many years, a few clubs and individuals have continued to support them over many years.

For clubs, these contests are a great way of giving SWLs and new licensees a chance to improve their station set-up and operating skills. It is interesting to note that, while just 3 stations submitted logs for the recent SSB Field Day, more than 20 operators were involved in these 3 stations, including 5 SWLs. My introduction to amateur radio operating was as an SWL with South Dublin Radio Club, operating in the 1988 SSB Field Day from the back garden of the QTH of the late Ben EI8EQ, so I can see what operating as an SWL in a contest can lead to!

### CW Field Day (1st & 2nd June 2019)

In 2018 I was the sole entrant in this contest, this year **Gerard EI5KF** also took part for a short period. I took to the hills for this contest, and ran 10W from a battery. For the final few QSOs, in order to reach my personal target of 100, I was forced to reduce power to 1W as the battery was almost exhausted. My 100 QSOs earned me an award trophy, which I don't really deserve; I wish there was more competitive activity in this contest!

### VHF/UHF Field Day (6th & 7th July 2019)

There was a good turnout for this event, band conditions were poor on Saturday but improved somewhat on Sunday. **Network Southern Area Radio Experimenters Club (EI9E/P)** was the only entry in the Open section, achieving a total of more than 800 QSOs on the five contest bands from their Wexford QTH. The EI9E/P log is also entered in the equivalent RSGB contest and was the highest scoring station on a number of bands in the RSGB event.

Following a change in the Rules that now permits stations in the Restricted Sections to enter up to 3 bands, **Tipperary Amateur Radio Group (EI7T/P)** operated on 3 bands, with a winning score on both 50 MHz and 144 MHz.

### SSB Field Day (7th & 8th September 2019)

Three clubs submitted logs for this event and, as noted earlier, more than 20 operators were involved. Mediocre HF band conditions kept the scores down even for the stations operating over the full 24 hours.

### 70cm and 2 metres Counties Contests (15th September 2019)

We have been running 70cm counties contests since 2017, just before our regular 2 metres events. This conjunction of the two events works well, particularly for those who go portable for these contests. Originally we devoted one hour to the 70cm event and two hours for 2 metres, but have now reduced that to 30 minutes and 90 minutes, respectively.

Fourteen stations in twelve counties took part in the 70cm contest, although only 10 logs were submitted. Propagation on 70cm is very much line-of-sight, so a good hilltop portable location works best. **Shannon Basin Radio Club** were on Co. Longford's highest point – Cairn Hill (aka Corn Hill) at 278 metres asl; **Albert EI6KO** was on Sorrell Hill (600 metres asl) above the Blessington Lakes in Co. Wicklow, while I was on Stillbrook Hill (514 metres asl) in Co. Offaly. These elevated QTHs definitely helped our scores, but we had to suffer wind and rain in the process!

There was a bigger turnout for the 2 metres event, with Forty stations in twenty three counties logged, plus two QSOs with a Welsh station. Again the portable stations fared best, with **Shannon Basin Radio Club** working sixteen counties. **Pat EI6GMB**, who was portable in the Sliabh Aughtys near Maghera, Co. Clare, worked some good "DX" using FM, including Mayo, Roscommon and Longford. Some of the fixed stations also did well, for example **Robbie MI0RRE** in Armagh and **Jim EI4HH** in Dublin worked eight counties each.

### 80 metres Evening Counties Contest (8th October 2019)

We had reasonable band conditions for this short (1 hour) contest with good support locally and overseas: excluding uniques, there were 37 EI and GI stations in the logs (in 21 counties), and a further seventeen overseas stations.

### 40 metres Counties Contest (13th October 2019)

Conditions on 40 metres have been variable in recent times, and we were out of luck on the day of this contest, with little or no short skip. Nevertheless, excluding uniques there were 36 EI and GI stations in the logs (in 20 counties), along with 54 overseas stations. Given the band conditions on the day, it was not surprising too find that more than two-thirds of QSOs by EI/GI stations were with overseas stations.





## Contest News

Joe Ryan EI7GY [contestmanager@irts.ie](mailto:contestmanager@irts.ie)

### 80 Metres Counties Contest (1 January 2020)

Band conditions on 80 metres were good for the first hour of this New Year's Day contest, but went downhill fairly rapidly after that. 47 contest logs were received, comprising 34 logs from EI and GI stations and 13 logs from overseas. Excluding uniques, there were 81 EI and GI stations (in 28 counties) and 40 overseas stations in the logs. Cavan, Longford, Louth and Monaghan were the only counties with no recorded QSOs. Looking back over the logs of recent counties contests, Cavan is undoubtedly the "rarest DX" on this island!



Tipperary Amateur Radio Group's QTH for VHF/UHF Field Day at Mullinavat, Co. Kilkenny

### Contest Calendar 2020

We have retained the same twelve contests as in 2019 – 3 Field Days plus 9 Counties Contests. We had considered reducing the number of contests, given the low level of support for some of them, however the ops involved that I have spoken to are keen that we retain the contest schedule as is, pointing out the unique and friendly atmosphere in the Irish counties contests which makes them attractive for seasoned and casual contesters alike, as well as for newcomers.

Many radio amateurs stay well away from contests for good reasons – perhaps because they don't see their hobby as a competitive activity, which is understandable. The counties contests are different from typical contests, our contests have elements of the "QSO parties" that are popular in North America. I would hope that some ops who feel a bit negative about contests in general would try one of our counties contests to experience the 'unique and friendly atmosphere' that I referred to!

Up to now, the three daytime HF counties contests ran for two hours each. Given the relatively small number of local stations actively participating in these events, two hours may seem like a long time! Participation levels depend somewhat on propagation – which has been mostly poor in recent years – but even when propagation has been better, participation levels have never been particularly high. The New Year's Day 80 metres event has been the best supported of the daytime HF contests and this continues as a two hour event. However the 40 metres contests in May and October will now run for just one hour each. Along with this change, and following several requests, we are replacing the separate Fixed and Portable sections with High Power and Low Power sections respectively, which is more usual for HF contests. Entries from portable stations are still welcome, but their entry category will depend on the power used rather than on their QTH arrangements.



Craig EI3FW with Shannon Basin Radio Club for the 70cm & 2 metres Counties Contests



Brian (SWL) operating under supervision with Tipperary Amateur Radio Group for VHF/UHF Field Day

## Contests – March and April 2020

[WA7BNM Contest Calendar](#) : [RSGB HF Contests](#) : [UKEICC Contests](#) : [IRTS Contests](#)

### March

Wed 11	20:00	90 minutes	<a href="#">RSGB CC CW</a>	80m, work UK only, exchange Serials
Sat 14	15:00	24 hours	<a href="#">Stew Perry CW</a>	160m, work everyone, exchange Locators, e.g. IO63
Mon 16	20:00	90 minutes	<a href="#">RSGB FT4</a>	80m, work everyone, use FT4 NA VHF Contest format
Sat 21	12:00	24 hours	<a href="#">Russian DX CW/SSB</a>	160-10m, work everyone, send Serial, log oblast code
Sun 22	07:00	4 hours	<a href="#">UBA Spring SSB</a>	80m, work ON only, exchange Serials, log ON Section
Tue 24	20:00	1 hour	<a href="#">IRTS Counties CW/SSB</a>	80m, work everyone, send Serial, County
Wed 25	20:00	1 hour	<a href="#">UKEICC CW</a>	80m, work everyone, exchange Locators, e.g. IO63
Thu 26	20:00	90 minutes	<a href="#">RSGB CC SSB</a>	80m, work UK only, exchange Serials
Sat 28	00:00	48 hours	<a href="#">CQ WPX SSB</a>	160-10m, work everyone, exchange Serials
Every	Wed	60 minutes	<a href="#">CWops Mini Contests</a>	160-10m, three separate CW contests

### April

Mon 13th	14.00	30 minutes	<a href="#">IRTS Counties FM/SSB</a>	70cms, work everyone, send Serial, County
Mon 13th	14.30	90 minutes	<a href="#">IRTS Counties FM/SSB</a>	2m, work everyone, send Serial, County

### Links

Contest rules & calendar: [www.irts.ie/contests](http://www.irts.ie/contests)  
 Contest results: [www.irts.ie/results](http://www.irts.ie/results)  
 UKEICC contests: [www.ukaicc.com](http://www.ukaicc.com)  
 SD Contest Logger  
 (free, and perfect for  
 Counties Contests): [www.ei5di.com](http://www.ei5di.com)

## Amateur Station Licence Exam

*Joe Ryan EI7GY*

A reminder that the next Amateur Station Licence Exam will be held on **Thursday 7th May 2020** in the **ComReg Offices in Dublin** and at other centres if warranted by the numbers.

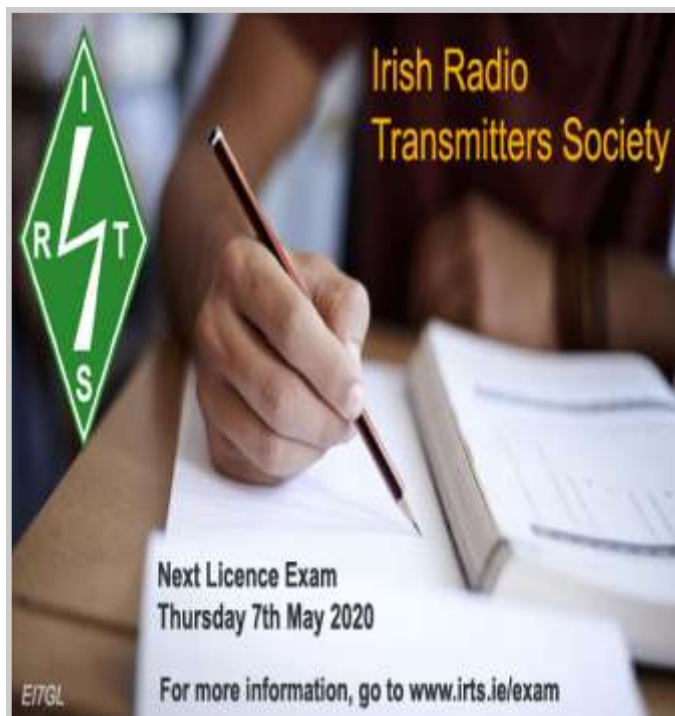
The closing date for receipt of completed applications is

**Thursday, 23rd April 2020.**

For full details on how to enter for this exam see [www.irts.ie/exam](http://www.irts.ie/exam).

This page also includes links to the exam syllabus, the Course Guide and other study material. Exam candidates who feel they could benefit from assistance with any aspect of the syllabus are invited to contact Robert Brandon EI5KH, Secretary of IRTS, who will try to put them in touch with a radio club in their area that may be able to help.

Robert's contact details are on the IRTS web site.



### New Postcode

Remember to include the new postcode in your address when contacting IRTS  
[memrecords@irts.ie](mailto:memrecords@irts.ie)





# Dublin Maker

by Adrian EI9HAB

## South Dublin Radio Club (EI2SDR) at Dublin Maker 2019



In July 2018 I visited Dublin Maker, a free to attend, annual community run event, held in Merrion Square, Dublin. Dublin Maker takes the form of a “show and tell” experience where inventor & Makers have an opportunity to showcase their creations in a carnival atmosphere. Sponsored by Science Foundation Ireland & Dublin City Council, Dublin Maker is part of the wider Festival of Curiosity, Dublin’s outstanding Science festival. Dublin Maker is a family friendly showcase of invention, creativity and resourcefulness, and a celebration of the Maker movement. The event promotes Science, Technology, Engineering & Mathematics (STEM) learning across all age groups; it’s a place where people show what they are making and

share what they are learning. Makers are of all ages and backgrounds come from all over Ireland and beyond. Dublin Maker’s mission is to entertain, inform and connect the Makers of Ireland, while inspiring the next generation of Ireland’s Makers and inventors.

As I wandered through the maze of marquees housing robots, lasers, coders, Raspberry-Pi, turtle-stitchers, hackers, 3D-Printers, Physics Buskers, live music and food stalls; I began to wonder “why aren’t we here?” Amateur Radio has been bringing people together to learn about science & technology for over a century. All amateur radio operators are “Makers” – we design and construct antennae, radios, radio-related equipment and integrate the latest technologies into our projects. Many amateur radio operators were involved in early breakthroughs in technology and telecommunications and that tradition continues to this day. It was clear to me that our club would be a great fit at such an event. Furthermore, with over 10,000 visitors, the event appeared to be an excellent opportunity to promote amateur radio and our club to a wide, interested, audience. After reporting back to the club on what I had experienced, we decided that EI2SDR would make an application to the 2019 Dublin Maker festival.

To the credit of Dublin Maker organisers, their online application process was very straightforward. There was an “open-call” a few months ahead of the festival date whereby potential exhibitors could indicate their interest. Once we had registered our club’s interest, a subsequent request from Dublin Maker for a more detailed submission followed. Niall EI6HIB and I took on the task of brain-storming what the exhibit should consist of; all the while keeping the “Maker” ethos to the fore-front. We wished to demonstrate and as many aspects of the amateur radio as possible, the Maker/home-brew nature of our hobby and to show how amateur radio can support STEM learning.

After consulting further with the wider club membership & committee, we settled on the following for our exhibit:

- HF (20m), VHF (2m), UHF (70cm) SSB/CW/Digi-mode stations – with home-brew antennae.
- Raspberry-Pi based Digital Mobile Radio (DMR) built by Niall EI6HIB
- CW Keys & Oscillators - so visitors could have a go at Morse!
- Software Defined Radio waterfall running on a screen; as a visual aid to explain the radio spectrum to the uninitiated.
- Arduino based, CW decoder built by Keith EI5KO.
- AM receiver projects built by various club members.
- A rolling PowerPoint presentation explaining the radio and the electro-magnetic spectrum.
- QR-code information signs – linking visitors to the club’s Twitter account, web-page & video content.
- Pop-up information stands from the Irish Radio Transmitters Society (IRTS). In particular information on Amateur Radio
- on the International Space Station (ARISS). This stand would also give us opportunity to speak about IRTS & club
- member involvement in supporting schools contacting the ISS, and to speak about another aspect of our hobby – amateur satellites!

We made our submission to Dublin Maker & were successful.

## Dublin Maker – 20<sup>th</sup> July 2019

Given we had to have all equipment unloaded and on site by 08:30, we had an early start! Our core team of Niall EI6HIB, Keith EI5KO, Derek EI9HSB, Tony EI7GUB and myself set to work. Our first job was installing our little “Antenna Farm”. . Our first job was installing our little “Antenna Farm”. We had stipulated to the organisers that our exhibit would require a secure area beside our marquee in order to safely erect antennae, lay down radials etc. However, on arrival, we noted that we were sharing this space with a large generator! Mercifully, the generator was both RFI and acoustically very quiet.



Keith EI5KO – Fixing!

Once we had the antennae sorted it was a matter of setting up our equipment and other elements of our display. The 3m<sup>2</sup> Marquee was just about sufficient (we’ll definitely need a bigger one next year) and the Trojan efforts of the set-up crew meant were ready to go for when the festival opened. As the morning went on other club members began to join us.

We confirmed our 20m HF operational status via SSB by calling CQ and making contact with Marcin SQ3M in Poland. We were pleased with this given the less than ideal situation of our (waste water pipe, come fishing pole, with just 4 radials laid on the ground, surrounded by buildings, in the city centre beside a large generator) 5m vertical antenna. It worked! Our equally, geographically, compromised VHF Collinear set-up was duly confirmed with Joe EI6EG out in Dun Laoghaire. Joe EI7GY was down early and immediately began operating CW on 20m; utilising the Club’s Yaesu FT-920 and the homemade 5m Vertical. The sight and sound of a skilled Morse operator in action immediately drew attention from visitors and other exhibitors/Makers alike. It quickly became clear that both seeing Morse in operation and being able to have a go at CW was a draw for visitors. Keith EI5KO and Derek EI9HSB ran impromptu, one-on-one, Morse classes in order to meet demand throughout the day. Colm EI4KO & Jim EI4HH took the CW baton from Joe and operated CW sessions later in the day; all of which proved popular with visitors.



Joe EI7GY being “supervised” by Leo EI8BR, “The CW Master”.

On the SSB front, Tony EI7JN operated 20m with varying degrees of success. Early promise on the SSB front waned through the day due to mixture of apparent deteriorating propagation and the nature of our location. Nevertheless Tony managed a number of contacts – as far as Russia.



L – R: Derek EI9HSB, Adrian EI9HAB, Niall EI6HIB, Keith EI5KO, Tony EI7GUB



EI2SDR  
Back: Luis  
EA5KY  
Middle:  
Tony EI7JN  
& Derek  
EI9HSB  
Front: Jim  
EI4HH

A number EI operators, (you know who you are), who were active on 2m during the day, afforded us the opportunity to demonstrate VHF communications to visitors and a number youngsters had QSO’s as a result. We kept an updated list of all types of contacts made on a whiteboard. This simple whiteboard attracted a lot of interest from visitors, many of whom were simply amazed that direct radio contact could be made over such long distances. It was a great conversation starter. Adding Niall EI6HIB’s first DMR contact with a US station to the list drew a lot of comment too!

Kevin EI3EU put in a sterling shift in front of the Marquee. With a handheld as a demo tool, he engaged visitors and answered questions on all aspects of the hobby. As the day wore on and the festival became much busier, we all found ourselves engaged with visitor after visitor.

In keeping with the festival’s “Maker” ethos we had club member’s “Home-brew” projects on display, including AM radio projects, Niall EI6HIB’s DMR project - a QRP transceiver integrated with a Raspberry-Pi based MMDVM (Multi-Mode Digital Voice Modem) utilising Pi-Star software.

QRP (DMR) Transceiver  
by Niall EI6HIB



Also on show was Keith EI5KO’s Arduino based CW decoder. These projects gave the more technically minded visitors a focus of interest and led to some interesting conversations. Keith also ran Digital Modes demonstrations with an ICOM 706 & WSJTx - particularly FT8. Keith also maintained the SDR waterfall using SDRConsole.



Arduino based CW Decoder  
by Keith EI5KO

A number of overseas call-signs (mainly European) who are resident in Ireland made their way to see us. Some indicated a wish to get an EI call-sign. Others highlighted that being recent arrivals to the city meant apartment living, which invariably meant limited or no scope for antenna installation. Being at Dublin Maker meant we could reach out to this community. Our presence, demonstrating an active club and the available resources of the IRTS, was a way of encouraging these operators stay involved with amateur radio while residing in Ireland. On that note, I would like to thank Luis EA5KY for joining with us on the day. Luis became part of the team and engaged with visitors, he also took a number of photos for us. Some “lapsed” Call-signs and Ex CB-ers made themselves known to us too. Seeing EI2SDR at the festival was a surprise for some of these visitors in particular. Some mused whether they should get back into radio!

A number of school & college students also paid us a visit and expressed interest in amateur radio. Many of this visitor type saw value in obtaining a call sign for the purpose of experimentation related to their fields of study – and to have fun with technology.

## Conclusion



We were busy throughout the day with visitors and other Makers. However, it is difficult to gauge whether presence at Dublin Maker will lead to increased membership for EI2SDR. A number of Makers from other exhibits visited us learn more about the potential of radio with regard to their own projects. The projects we displayed demonstrated to other Makers and visitors the scope of amateur radio and how we continue to develop and integrate the latest technologies into our hobby. We, in turn, learned a lot about what is happening on the “Maker” scene. In fact, many of us who were at Dublin Maker wished we had more time on the day to see and learn more from the other Makers and their exhibits. However, it was satisfying to know that we as club were making ourselves known to a wider, interested, community and we ensured that other Makers knew that we are available to them as resource in future. To this purpose we directed other Makers and visitors to our Twitter account, [@SDRadioClub](https://twitter.com/SDRadioClub), in order that they can keep up to date with EI2SDR activities.

Dublin Maker’s stated aim is to build a community for all Makers ranging from tech enthusiasts to crafters, educators, tinkerers, hobbyists, engineers, artists, science clubs, students, authors and commercial exhibitors. As an amateur radio club we could see real value in being present at the event. The calibre of other the Makers, for example EIRSAT-1 (Ireland’s first satellite), demonstrated the potential for synergies, cross-fertilisation of ideas and learning between different, likeminded, Maker groups.

Indeed, many amateur radio operators are involved with other Maker groups, clubs and collectives. This collaborative approach between Makers of different backgrounds is evident on social media. Twitter is the primary medium of communication for Dublin Maker and in the run up to the event many Maker groups forged links over this platform. It was very interesting to track the development of each other’s exhibits in the run up the event through Twitter. Furthermore, these social media connections led to Makers encouraging and supporting each other’s endeavours. This in turn has led to Makers attending and supporting each projects & events outside of the Dublin Maker festival. The organisers and sponsors appear to be achieving their stated aims. EI2SDR plans on being there in 2020!



Dr Richard Millwood TCD (centre), TCD Computer Science & fellow Maker, visiting EI2SDR





**June 27th 2020**

**10.00 am - 6.00 pm**

**Herbert Park Dublin 4**



**Irish Radio Transmitters Society**  
**Treasurer's Report for the year to 31st December 2018**  
**for presentation at the Annual General Meeting**  
**Woodford Dolmen Hotel, Kilkenny Road, Carlow - Sunday 9th April 2020**

I have pleasure in presenting the Accounts for the year 2019 to members of the Society prior to their being submitted for approval at the AGM of 19<sup>th</sup> April 2020.

The Income and Expenditure account shows a surplus of €8,825 at year-end, a significant increase on the small deficit at the end of 2018. This increase is in part due to a reduction in the number of editions of Echo Ireland published in 2019, and in part due to significant savings in insurance costs in the current year. This reflects the considerable work put in by Larry EI9CN in consolidating the previous IRTS policy, the policy held by AREN and the new Club insurance in to a single policy covering all the required areas. This has achieved a significant saving in insurance costs for the year, whilst at the same time extending cover to Clubs that previously had to pay for their individual policies. It has also eliminated a significant cost for AREN who now show a surplus for the year.

Subscription income for the year is virtually the same as that for 2018.

It is very encouraging to note that income from examination fees shows a substantial increase over the previous year. It reflects the increased numbers sitting the HAREC examination during the year.

Details of any changes in the PAR fund and the Donations Fund can be seen in the notes to the Balance Sheet. The PAR fund showed no activity during the year and remains available to any Club or Member of the Society who can put forward a project to the committee that would potentially raise awareness of the Society or encourage membership. The Donations fund benefited from the sale of equipment donated by SK and a note of thanks is due to those members who volunteered to dismantle and remove equipment that was subsequently sold.

To summarise, the Society again remains in a healthy financial position going in to 2020. The surplus generated in 2019 is not expected to be at the same level for the coming year as issues of Echo Ireland revert to normal levels.

Once again, thanks to Bob O'Connell EI5CK and Brendan Lynch EI6GA who applied their usual thorough scrutiny in auditing the accounts prior to signing them off.

*Dave O'Connor EI6AL    Honorary Treasurer*

**Balance sheet at 31st December 2019**

	<b>2018</b>	<b>2019</b>
<b>Fixed Assets</b>		
Equipment	0	0
Prize Bonds	89	89
Irish Life & Permanent Shares	0	0
<b>Current Assets</b>		
Stock for Re-sale	873	588
Cash on Deposit	60,002	60,002
Cash in Bank	5,196	14,362
<b>Total Assets</b>	<b>66,160</b>	<b>75,041</b>
<b>Total Liabilities</b>	<b>0</b>	<b>0</b>
<b>Surplus Assets over Liabilities</b>	<b>66,160</b>	<b>75,041</b>
<b>Represented by</b>		
General Reserve	55,884	63,259
IARU Conference Reserve	2,965	4,306
Promoting Amateur Radio Fund	4,262	4,262
Donations Fund	3,129	3,579
Stock Depreciation @20% PA	-80	-175
	<b>66,160</b>	<b>75,041</b>

## Irish Radio Transmitters Society

### Income and Expenditure Account for the Year to 31st December 2018

	2018	2019
<b>INCOME €</b>		
Subscriptions	23600	23590
Donations	103	1576
PAR Fund	0	0
Advertising	0	0
Book and CD Sales	-169	-50
Interest & Currency Gain/Loss	-72	-79
Exam fee and Morse Tests	1560	2000
Special Call QSL	140	157
AREN	295	267
Other Income	249	224
<b>TOTAL INCOME</b>	<b>25,706</b>	<b>27,684</b>
<b>EXPENDITURE €</b>		
Echo Ireland Printing	6442	3371
Echo Ireland Postage	5645	2806
Postage	514	887
QSL Outgoing	1151	979
QSL Incoming	898	1068
Paypal Commissions	781	779
Insurance	2141	1398
Committee Meetings Room Hire	1030	1062
Stationary	506	346
AGM Costs	568	533
IARU Dues	1055	1406
Licence Fees	100	740
IARU Convention Reserve	2000	2000
Bank Charges	369	374
Trophies Etc	310	470
Website Costs	210	265
Donations	0	0
AREN	1247	50
Comreg	57	0
PAR Fund	0	0
Exceptional Items	254	0
YOTA	0	0
Miscellaneous	502	325
<b>TOTAL EXPENDITURE</b>	<b>25,779</b>	<b>18,859</b>
<b>NET INCOME/DEFICIT</b>	<b>-73</b>	<b>8,825</b>

Report Compiled 02/01/2020

## Irish Radio Transmitters Society

### Notes on, and forming part of the Accounts for the year ended 31st December 2019

#### Income

Subscriptions and Income received during the year were treated as cash received and credited to the income and expenditure account. No provision was made for subscriptions in arrears. No provision was made for treating subscriptions falling after 31st December as prepayments. Donations made in 2019 €1,000 to EiDx Group 5V7EI

#### General Reserve

Balance as at 1st January 2019	€ 55,884
Surplus at 31st December	€ 8,825
Treansfer to Donations Fund	€ -1450
General Reserve carried forward	€ 63,259

#### IARU Conference Reserve

Balance at 1st January 2019	€ 2,965
Transferred from general reserve	€ 2,000
Meeting Vienna	€ -659
Total reserve 31st Dec	€ 4,306

#### PAR Fund

Balance on 1st Jan 2019	€ 4,262
Balance on 31st Dec	€ 4,262

#### Donations Fund

Balance on 1st Jan 2019	€ 3,129
SK Sale	€ 1,450
Donations 2018	€ -1,000
Balance on 31st Dec	€ 3,579

#### Cash on Deposit

Balance on 1st Jan 2019	€ 60,002
Balance on 31st Dec	€ 60,002

#### Balance AREN

Balance on 1st Jan 2019	€ -952
Funds generated by AREN	€ 217
Balance on 31st Dec	€ -735

(this deficit included in general reserve)

## Auditor's Report for year ended December 31st 2019

We, the undersigned, acting as Honorary Auditors of the Irish Radio Transmitters Society, have compared the foregoing Income and Expenditure Account, Balance Sheet and Notes thereon, with the Books and Vouchers of the Society and Certify that they are correct and in accordance with them.

  
Robert O'Donnell EI5CK

Date 15/04/2020

  
Brendan Lynch EI6GA



## Irish Radio Transmitters Society



### Committee Report for presentation to the Annual General Meeting Woodford Dolmen Hotel, Kilkenny Road, Carlow - Sunday 19th April 2020

**Committee Meetings:** Seven committee meetings were held during the year, alternating between Portlaoise and Athlone.  
*Robert EI5KH*

**Accounts for 2019:** These have been reported in Echo Ireland.

**Membership Report:** Membership of the Society showed a slight increase for the year, with a total of 921 members at year end, compared with 919 at the end of the previous year. It is no longer possible to match this trend with any increase/decrease in the overall number of licences issued in Ireland as this information is no longer issued by Comreg following the new GDPR regulations. The Society was delighted to welcome 59 new members in 2019, including 11 SWL, 5 rejoiners who had been absent from the society for five years or more and 7 new overseas members. (including Japan and Australia). In view of the declining numbers of licenced amateurs in a number of european countries, the IRTS is performing reasonably well in holding its membership at the current level. The work being done by Clubs in generating new membership through training courses and support for examination candidates is to be commended. *Dave EI6AL*

**Amateur Station Licence Exam:** 5 exams were held during 2019, for 44 candidates, of whom 28 passed. This brings to 347 the number of candidates who have qualified for the HAREC since 2005, when IRTS took responsibility for organising the licence exam.

The exam is in two parts, with 30 questions on Amateur Radio Regulations and Related Topics and 30 questions on Amateur Radio Theory and Related Topics. Most candidates who fail the exam have difficulty with radio theory, which is a critical part of the exam. Perhaps some candidates may not appreciate the need to demonstrate an acceptable level of technical knowledge. Those tutoring or mentoring exam candidates should emphasise the fact that amateur radio is defined to include “self-training ... and technical investigations”, plus the fact that the amateur radio licence entitles the holder to build, modify and operate radio equipment that is exempt from type-approval or certification under EMC and other directives that generally apply to radio frequency equipment.

Our Course Guide covers all aspects of the exam syllabus, and we are also offering to put candidates in touch with a radio club in their area if they feel they could benefit from assistance with any aspect of the syllabus; details of this service are on the IRTS web site. *Joe EI7GY*

**Awards Committee Report:** Once again we look forward to the IRTS AGM and the subsequent Awards Ceremony. Generally the IRTS contests are well supported with the 80m ones drawing the greatest numbers. In contrast and unfortunately both the CW and SSB Field Days have been badly supported in the recent past. In 2019 there were only two logs submitted for the CW Field Day and three logs for the SSB Field day.

Of all the IRTS contests the SSB Field Day offers the greatest opportunity for experienced and new operators to get out and give it a go. The atmosphere is relaxed but nevertheless competitive and as there is rarely major pile-ups it is a great opportunity for inexperienced operators to get involved with antenna construction, operating techniques and logging software. There is no doubt that the SSB Field Day is the best chance to teach and encourage some of the more shy operators in a relaxed and fun environment.

Apart from the contest awards, the Committee is always seeking to receive nominations for “Services to the Society” and “Other Achievements” and would hope that IRTS membership would be proactive in putting clubs and/or individuals forward for these awards. Please send nominations/enquiries to Jim Holohan EI4HH, IRTS Awards Manager. *Jim EI4HH*

**Web Site:** Our web site irts.ie provides information on the society’s activities and other amateur radio events. While the material on the site is largely static, it includes the current week’s Radio News Bulletin as well as archives of these Bulletins going back to 1998, representing a very useful permanent record of local and international amateur radio activity for the past 20+ years.

During 2019 we added a considerable volume of material relating to the experiments carried out by Colonel Meade Dennis EI2B over the period 1898 to 1945: this material includes more than 400 pages of Colonel Dennis’s correspondence and notes, which show the considerable lengths to which early radio experimenters went to understand the theory and practice behind radio transmission and reception. These notes should be of great interest to all radio amateurs and experimenters, and also represent a valuable resource for anyone researching the history of radio communications. *Joe EI7GY & Séamus EI8BP*

**Comreg:** The Commission for Communications Regulation (Comreg) is the statutory authority responsible for amateur radio licensing. Regular contact is maintained by the society and there is a good working relationship with the Licensing and Spectrum Management sections of the Commission. The importance of the society maintaining good relations with the licensing authority cannot be overstated. The Comreg liaison role is pivotal in ensuring that the amateur radio service does not just endure in its present form but continues to develop as a relevant pursuit for enthusiasts of all ages and makes an important contribution to the science of radio communications. For many years this role was ably performed by the late Sean, EI7CD. Sean brought a unique combination of self taught technical skill and a lifetime experience of working in a public service environment to his representation of the amateur service in Ireland when negotiating with Comreg. He was consequently held in high regard and well respected by that body. Since his passing, the role has been ably carried out by Dave, EI3IO with support when required by IRTS society committee members.



This was done in addition to the other tasks to which they were assigned. They deserve our sincere appreciation for keeping the show on the road. During the course of 2019 Gerry EI8CC became the IRTS ComReg liaison officer (with the support of the aforementioned committee members). Gerrys first task is to build a good working relationship with his counterparts in ComReg and to establish a mutual level of confidence and respect. *Gerry EI8CC*

**Contests Report:** In 2019, the Society ran three Field Day contests and nine Counties Contests. Support for the HF Field Day contests was very low, with the CW and SSB events between them attracting just 5 logs in total. Support for VHF/UHF Field Day was somewhat better, with 10 logs submitted. The Counties Contests were well supported, with log entries for the nine events from a total of 80 different EI and GI stations plus 25 overseas stations. To encourage as many as possible to participate and submit logs, we continue to accept logs in a variety of formats, including paper. *Joe EI7GY*

**Radio News:** 2019 was a significant year for our radio news service as it marked the 50th anniversary of the transmission of the first IRTS radio news bulletin. Since that inaugural event in January 1969, news has been transmitted weekly on HF and VHF from various locations throughout the country. To celebrate this anniversary, Jim Bartlett EI2BB - who read the news bulletin on 80 metres SSB 50 years previously in January 1969 - arranged to read the 80 metres news on Sunday 20th January 2019.

The radio news script focuses on club activities, local contest news and upcoming events. News items submitted by members and others are collated each week by Mark EI6HPB and distributed to a team of news readers, who transmit the bulletin and manage the subsequent call-ins. This important service relies on the work of a dedicated team of volunteers, including the Radio News Editor and the many news readers around the country. We have been trying, with little success, to bolster the team of news readers, so that the service in each area will not be totally dependent on the availability of a few individuals. The society is indebted to those who devote their time, week in week out, to deliver this service.

**Publications:** These consist of EiNews, an electronic newsletter published on the first of each month and emailed to more than 720 subscriber-members, and Echo Ireland, our quarterly journal.

Twelve issues of EiNews were published in 2019. The monthly newsletter is an ideal medium for clubs and others to publicise upcoming events. Steve EI5DD, EiNews editor, has been making this point to members in recent months – with limited success, it must be said!

Séamus EI8BP was involved in the production of Echo Ireland for many years and, in 2018, indicated that he wished to step down from the position of editor. During 2019, a member volunteered to take on the job, and with assistance from Séamus he worked on what was hoped to be the Autumn 2019 issue. In the event, it proved impossible to proceed to publication with this issue. As a short-term measure, Jim EI4HH with some external assistance produced a Winter 2019-2020 issue, which was circulated to members early in 2020. .

The society urgently needs a member to take on the editorship and production of this important publication.

**YOTA Report:** Brian EI8IU, IRTS Youth Officer, reported that the YOTA working group has met throughout the year, where it was agreed to continue to work with the scout movement in an attempt to gain traction among the youth to consider taking up the hobby.

The 2019 IRTS YOTA year continued with a group of Scouts at the Shannon Basin Radio Club rally during the IRTS AGM weekend. The scout troop from Longwood in Co Meath were presented with electronic kits and soldering stations. Owen EI4GGB gave a practical demonstration on soldering and built several of the electronic kits with the scouts.

At the Friedrichshafen rally Brian attended the IARU Youth meeting, where he had a meeting with Lisa PL2LS, Youth Working Group chairperson, IARU Region 1. Preparations were being made for the YOTA trip to Bulgaria and there were also regional gathering of the Scandinavian and Italian YOTA groups. Another regional event in Scandinavia was also being planned. The main YOTA 2020 Summer Camp venue will be Karlovac, Croatia, not far from the capital city of Zagreb.

These YOTA gatherings are usually well attended by young operators developing their skills through experience, and the YOTA organisers were proud to be able to show the National Societies present that there is Youth out there with an interest in the hobby.

The main YOTA related event of 2019 was the JOTA/JOTI event which was held in the Scouting Ireland HQ in Larch Hill in the Dublin mountains, over the weekend of 19th & 20th October. The IRTS was invited to attend by Scout Leader Marty (EI2IAB) who was motivated to get his licence after the same event in 2018.

Brian and Fergus EI6IB travelled to Larch Hill and were met by Marty and Keith (EI5KO) who were already in the process of setting up the station. The IRTS President, Jim EI4HH, also attended. Once again the scouts were able to have several QSOs, including the excitement of making contact with other JOTA stations. They also had the opportunity to make more of the electronic kits and try their hand at CW on a Morse trainer. They showed great enthusiasm, some being more confident than others. However they all seemed to enjoy the day. Several EI clubs had JOTA stations on the air so hopefully in 2020 we will have even more.

A reporter from Scouting Radio interviewed Keith and Brian, this interview aired on Dublin FM in the week after the event.

December was international YOTA month and once again it was a major success. A total of 48 stations took part with 128,657 qsos taking place. EI0YOTA was in 12th place out of the 48 with 3,426 qsos, (thanks to those Clubs and individuals who helped). The UK, German and Italian stations were well ahead of the pack.

While there was great demand to work EI0YOTA on CW, SSB and digital, sadly there were not too many offers to use the call, despite appeals on the IRTS radio news in the weeks before the event.

The YOTA working group would ask all Clubs and Individuals to support the JOTA event in October and the YOTA event in December as a means of encouraging young members into the hobby.

The YOTA group is happy to hear from young licensed operators, or SWLs wishing to get their licence. If you know of any young people who are interested please ask them to contact the IRTS. *Brian EI8IU*

**EMC Report:** On the 27th-28th of April the IARU Region 1 Interim meeting took place in Vienna. Brendan EI6IZ represented IRTS in his capacity as the IRTS EMC officer.

EMC is under Committee 7, C7 had a full programme for the conference. Papers are available from the IARU website1

**Noise Floor Measurement:** The two main topics of discussion were the ongoing Noise Floor Measurement project which is now making good progress.

The DARC backed project (ENAM) is based around the Red Pitaya SDR development board and a custom designed measurement antenna. This system is now in early deployment and it is expected to have 50-70 units produced and set up to provide ongoing monitoring of the noise floor between 100KHz and 30Mhz. This is an automated, high dynamic range, calibrated system that produces results comparable to the methods used in ITU372-P13

The SARL system is a low cost system based around a RT-SDR and a linux based computer such as a raspberry Pi. The software is open source and the developers welcome participation. It is not a calibrated system although calibration is under development.

**Wireless Power Transfer:** Paper VIE19 C7-005 provided a good overview of the potential issues around Wireless Power Transfer.

To date most of the work in this area is focused on High power wireless charging for electric Vehicles (WPT-EV) and is being driven by the Automotive industry.

The planned operating frequency for WPT-EV is 79-90 KHz with power levels between 3 - 30KW. The issue for Amateur radio are the harmonics (& other spurious emissions) at present the developers of this standard are seeking a 40dB reduction in protection levels for the Harmonics

CEPT have produced a paper on the potential impacts to radio services that may arise from the proposed standard 2.

The IRTS EMC officer attended 1 meeting of the NSAI TC16 (EMC standards) in Dublin in 2019.

In early December 2019, Comreg published a Consultation on the management of Radio Spectrum Interference Complaints (comreg 19/108 )3

This consultation proposes revision of the current RFI complaint classification process.

The document lays out a 3 tier system and proposes the involvement of the victim in case closure. IRTS broadly welcomes the proposals outlined in the consultation and has made a submission.

The EMC officer, Brendan EI6IZ is standing down at the 2020 AGM having served as the society's EMC officer since 2007, He would like to thank the membership for their support and looks forward to working with his replacement to ensure a smooth transition of the role. *Brendan EI6IZ*

1 <https://vienna.iaru-r1.org/conference-documents/c7/>

2 <https://www.ecodocdb.dk/download/2fed7e3c-7543/ECC%20Report%20289.pdf> 3 <https://ww>

**Automatic Station Coordination Group:** The Automatic Station Coordination Group work with ComReg in relation to the coordination of automatic stations in EI where applications for repeaters/gateways/beacons etc. are referred through the IRTS then to the group which consists of all repeater/beacon keepers in the country.

In 2019 a total of eight automatic station applications were processed by the group.

The following is a breakdown of applications received:

Digital Voice Repeater: 3

Analog Voice Repeater: 2

Digital Voice Gateway: 1

APRS Digipeater: 1

Beacon: 1

Of these, five were new applications and 3 were amendments to existing licences.

The committee wishes to thank everyone involved in the group for their cooperation and input to the group during 2019. *John EI8JA*

### **VHF Report**

**70cm:** As far 70cm's was concerned it was Mark EI3KD's year! On the 28/12/2019 at 0906 UTC contact was made between EI3KD and D41CV (Cape Verde Club station) on 432Mhz tropo to claim a new World record! Path distance was 4163km, mode FT8. Operator on the Cape Verde side was Mark EA8FF.

It was a super year with a number of intense tropo openings, hopefully 2020 will be another record breaking year.

**Low Band VHF:** Phil EI9KP continues to experiment with our new 5m & 8m bands, while he has carried out experiments using SSB with members of the Mayo Radio Experimenters Network, most of his time is spent with the beacon he uses on 40.150 in CW mode while in the shack and building various antennas for low band VHF.

For any EI's interested, Transverters for the 5m & 8m bands can be sourced for a reasonable price from [Transverters-Store.com](http://Transverters-Store.com)

**Low band beacons:** The EI1KNH 5m Beacon is on air since December 16th 2019, its grid locator is IO63VE and frequency is 60.013Mhz. Transmits PI4 + CW with 25w output. The proposed 8m beacon should be on air by March 2020, frequency 40.013Mhz and 40w output. Both the 5m & 8m beacons share the same site as EI4RF and EI0SIX.

For further information check out EI1KNH on QRZ.com.

**New Repeaters:** Since Nov 2018 – Nov 2019 the Galway Digital Network has put on air 3 DMR repeaters, 1 C4FM Wires-X system, 1 multimode gateway C4FM/DSTAR & DMR. During 2020 its hoped to put up a DMR repeater in Loughrea along with a 2m C4FM repeater on the same site. A DSTAR 70cm which is the converted EI7AKR analog repeater also going on air in Galway. In Roscommon EI2BED a multimode digital gateway is soon to go on air. For more detailed info see <http://galwayvhfgroup.blogspot.com/>

**Microwave activity:** The Mayo VHF Group were active during 2019, experiments were carried out on the 23cm, 13cm, and 3cm bands mainly using FM/SSB. Distance experiments were also carried out using 6cm ATV, the transmit/receive units in this case were built around Chinese built FPV Drone camera/receiver units, a number of frequencies on these units fall into our Amateur spectrum allocation. 2020 promises to be a busy year between island and SOTA microwave activations.

SG Labs transverters are used on 23cm & 13cm offering a cost effective entry to the microwave world for any amateur licence holder.

**Nets:** There are a number of Nets operating with the aim of promoting VHF activity.

*Shannon Basin Radio Club* – Thursday evenings at 8pm on 145.350Mhz FM.

*Cork VHF Group* – Tuesday evenings from 7pm-10pm. For further information check out the VHF page on [www.irts.ie](http://www.irts.ie)

*Galway Net* – Monday evenings at 8.30pm on GREC 2m repeater 145.625Mhz FM, Net will take the form of a Q & A in relation to problems encountered using digital radio.

*Dundalk Radio Society* – Net takes place on 2m repeater EI2CCR, Monday evenings at 8pm. *Joe EI3IX*

**HF Report:** As IRTS HF Manager Dave, EI3IO attended meetings of the permanent HF Committee at the IARU April 2019 interim meeting in Vienna. The HF Committee addresses planning and operational matters relating to the use of spectrum allocated to the amateur service below 30MHz.

The IARU HF Committee also:

- Seeks to ensure that adequate use is made of existing frequency allocations and considers possible new allocations.

- Seeks to ensure that adequate use is made of existing frequency allocations and considers possible new allocations.
- Co-ordinates and promotes scientific investigations by member societies of IARU Region 1 on spectrum below 30MHz.
- Develops and maintains the IARU Region 1 band-plans aimed at promoting effective communications.
- Encourages special projects in frequency allocations below 30MHz aimed at advancing amateur radio communication techniques.
- Assists in the protection of frequency allocations to the amateur service below 30MHz by stimulating activity and demonstrating effective use by amateurs.
- Plans and conducts IARU Region 1 HF contests,
- Advises on interference problems relating to frequencies below 30MHz.

The HF Committee maintains communications with Member Societies through an Internet reflector discussion group on the Region 1 IARU Website.

The IOTA standings table remains live. Those interested in publicising their IOTA successes should provide the HF Manager with details of the number of IOTA references worked. Columns are also available to input official scores, as well as the number of islands worked in each continent. For further details on IOTA standings see [www.irts.ie/iotalist](http://www.irts.ie/iotalist)

In addition from time to time low VHF spectrum issues in the range 30 to 70.5MHz have also been addressed. In this regard IRTS holds the licence for the 60MHz beacon EI1KNH which went on the air during December 2019 on 60.013MHz. It runs 25W into a vertical folded dipole. The new 5-metre beacon shares a site already occupied by EI0SIX on 6 metres, and EI4RF on 4 metre in IO63VE. An 8-metre beacon will also be operational shortly on 40.013MHz. The 4, 5 and 8 metre beacon keeper is Tim EI4GNB.

The comprehensive 70MHz award programme offered by IRTS is still active, see [www.irts.ie/70mhz](http://www.irts.ie/70mhz). Alternatively contact the HF Manager. *Dave EI3IO*



**IARU Liaison:** The role of IARU liaison is to facilitate the information flow between the IRTS and the IARU-Region 1. Dave, EI3IO is currently Chairman of the IARU's Spectrum and Regulatory Liaison Committee (SRLC) formerly the IARU's External Relations Committee (ERC). Dave therefore remains closely involved with key issues affecting amateur radio at the IARU level. During 2019 IARU was focused on preparations for ITU WRC-19. This included the avoidance of an agenda item for WRC-23 to consider an allocation to the aeronautical mobile service in the 144 – 146MHz frequency band.

- .WRC-19 access to 50MHz for the amateur service
- · Pre WRC-19 countries retain their current status in the 50 - 54MHz frequency band.
- · The Democratic Republic of Congo removed itself from the list of pre WRC-19 countries.
- · The amateur service has a secondary table allocation in most of Region 1 in the 50 - 52MHz band.
- · 44 Region 1 countries have a primary allocation in all or part of the 50 - 54MHz band.
- · 14 CEPT countries have a 500kHz primary allocation in the 50.0 - 50.5MHz band.
- · The Russian Federation has a 200kHz secondary allocation in the 50.08 - 50.28MHz band.
- · The Final Acts of WRC-19 enters into force on 1 January 2021, however administrations may make provisions to provide 50MHz spectrum at an earlier or later date.
- · The amateur service shall not cause harmful interference to stations of other primary or secondary services, with the exception of the pre WRC-19 countries.
- · Individual amateurs should not use (unless already authorised) the newly allocated spectrum until their national licensing authority has given the go ahead for its use.

#### Other WRC-19 Agenda Items:

- Small Satellites; – 137/149MHz allocated nicely separated from amateur frequency allocations.
- Fifth Generation Mobile (5G); – 5G mobile will not encroach on the 47GHz allocation
- 275-450GHz; – access preserved via footnote 5.565
- 5 GHz Wi-Fi ; - Minimal impact on 5725-5850MHz

Footnotes; –Brazil and a few other South American countries achieve primary status for the amateur service in the 430MHz frequency band on a national basis. Iran withdrew its name from the 136kHz restrictions.

Wireless Power; – No Change to the ITU Radio Regulations

Agenda items at WRC-23; - Review of 1240-1300MHz (Galileo receiver protection etc)

The triennial meeting of IARU's General Conference will take place on the 11-16 October 2020. *DaveEI3IO*

**AERN:** March and April had operators out on the hills in Tipperary and Connemara. In Galway operators were active for the Connemara Ultra Marathon. Due to the unforgiving terrain and requirements of interagency co-operation, they used a mixture of 80m Voice, 2m Voice, Network Radio and Tetra communications. Also in April, members attended Voluntary Emergency Services Day hosted in Cork Institute of Technology. This was covered in more detail in the Summer 2019 Issue of Echo Ireland.

Several members were active during IARU HF Field day weekend. This is a useful event which allows for setting up and operation for the purposes of learning more about ones station and equipment, testing new ideas and figuring out improvements on what should be relatively active HF bands. In October, members were active at several JOTA operations country wide, educating both scouts and their leaders about Amateur Radio.

In November AREN held a national training and development weekend in Dromineer, County Tipperary. We were hosted by Declan Collison, EI2GE, a licensed amateur and owner of Lough Derg House Hostel. Topics covered over the weekend included two separate DMR demonstrations, one showing a man-down alerting system, the other showing how two timeslots can be used simultaneously though a repeater system. There was a presentation on AREDN Mesh networking as well as a demonstration and discussion about its utility to assist served agencies. In that vein Cisco the Networking Equipment/Services company also presented a webinar on their involvement with providing emergency communications at many incidents both in North America and other parts of the world. On Saturday afternoon a workshop took place on the role and purpose of risk assessments in AREN activities. Sunday then saw pretty much all the members equipment being brought out for scrutiny and assessment with demonstration, this included Solar PV equipment, HF and VHF/UHF go-kits, Winlink and JS8call digital communications modes.

Later in November Conor, EI4JN attended a Voluntary Emergency Services (VES) Interagency meeting in Clonakilty. The major communications topic being discussed was the use and maintenance of older analogue equipment by the voluntary agencies in the event of the newer digital systems failing.

Throughout 2019, hundreds of man hours were directly spent by members on public service activities. This does not include the time spent preparing for events, training or meeting with served agencies. Many thanks to all members for donating their time and expertise to public service. Anyone interested in what AREN does should feel free to contact John Ronan, EI7IG ei7ig@aren.ie or via the contact details on the IRTS website. *John EI7IG*

**The IARU Monitoring System/IARUMS:** IARUMS is the intruder watch organisation of the International Amateur Radio Union. Its tasks are observing the amateur radio bands for illegal intruders to protect and defend our bands. After identification of the intruders reports are sent to the relevant state authorities who might introduce steps to remove these intruders. Monitoring HAMs and SWLs are stationed around the globe and watch the bands on a regular basis. Ireland has taken part in the IARU monitoring system for many years now. Reports are sent to HQ in Germany at the end of each month, showing the latest intruders heard in Ireland. An intruder watch email alarm system for a quick response in a clear and present band intrusion is also run by the organisation. Typical intruders observed in Ireland are: Over The Horizon Radar from Russia, China, Iran, Australia and Cyprus; digital and analogue communication from armies of several states, taxi communication from Russia and former Soviet states; fishermen from Europe, America, Africa or Asia; broadcasting stations from various states.

The current IARUMS officer is Michael EI3GYB, who accepts reports about intruders under [michaelfoertig@eircom.net](mailto:michaelfoertig@eircom.net).  
*Michael EI3GYB*

**The QSL Bureau:** QSL Cards: The QSL cards are distributed by a dedicated team of members on a regular basis. After an initial sort by Pat EI2HX the cards are brought to the IRTS committee meetings and handed over to the attending QSL managers, those not at the meeting will receive them in the post later that week so they can be sorted and dispatched to you as quickly as possible. On the subject of postage, with the cost of postage as ever going up, it was noted by the QSL managers that 5 cards could be sent for the same price as a single card. If there are only a couple of cards for you this time the manager will hold onto them and add them to the cards that arrive the next time, if there are none to add then your cards will be sent to you.

**You and your cards:** On the subject of you, do the QSL managers have your details? Some members may have changed their call sign over time, be it from a 3-letter to a 2-letter call sign, have come back to the hobby, (and received a new call sign) and if you are in charge of a special event or club call sign, do please let the QSL manager for that call sign's number know who to send it to, as not all QSL cards come back with "Via EI ????" on them. So please let the relevant QSL manager know, so that you get YOUR cards. Your QSL manager's details are, as always, on page 2 of Echo Ireland, so let YOUR current manager and even YOUR previous call sign manager know where to send them, as the other station may take months to send out their cards. It has been noticed by some managers that some QSL cards arrive many years after the QSO, this is not because the QSL card has been lost in the various bureaus, but rather someone has got a new computer logging programme and has simply stuck a sticker on a blank QSL card. You can bring your QSL cards for EI to the rallies and hand them in at the IRTS stand, but all non-EI's must be sent to our outgoing manager EI6AL, details of which are found on Page 2 of Echo Ireland and on the society's web pages.

The outgoing committee would like to thank all the QSL managers for their service in getting the QSL cards to their final destination.

## Irish Radio Transmitters Society



### Annual General Meeting

**April 19th 2020**

### Woodford Dolmen Hotel, Carlow

Members are hereby notified that the Annual General Meeting of the Irish Radio Transmitters Society will be held at 2pm on Sunday April 19th at the Woodford Dolmen Hotel, Carlow.

#### Committee Nominations

Rule 23.1 requires that the committee shall, at least 28 days prior to the Annual General Meeting, send to all paid-up members a list showing the nominees for the offices of President and Vice-President and eleven committee positions.

The following are the Committee's nominations:

<b>President</b>	Jim Holohan	EI4HH
<b>Vice-President</b>	Pat O'Connor	EI9HX

#### Committee

Michael Goss	EI2JM
Harry O'Loughlin	EI2KL
Steve Wright	EI5DD
Robert Brandon	EI5KH
Gerry Gervin	EI8CC
Brian Canning	EI8IU
Joe Fadden	EI3IX
Dave O'Connor	EI6AL
Larry McGriskin	EI9CN
Declan Horan	EI9FVB
Paul Raftery	EI9HQB

The names of other members eligible and willing to serve as President, Vice-President or as committee members shall be added to the list upon receipt of nominations in writing, by any ten members in the case of a nominee for the Presidency or Vice-Presidency or by any other two members in the case of a nominee for any of the eleven committee positions (Rule 23.2).

# Radio Experimentation

Tony EI5EM



**“Radio amateurs experiment with and operate home-made and commercial radio communications equipment. We use our knowledge and skill to communicate with other radio amateurs around the world, using radio frequencies ...”** or so says the blurb on the homepage of the Irish Radio Transmitters Society.

Sadly, a lot of the experimentation and construction of home-made equipment has gone out of the hobby and is a thing of the past. But there are still a few dinosaurs around who take the hobby beyond simply operating commercial black boxes connected to expensive antennas. I have to confess that I am one such dinosaur.

Passing the licence exam or the Morse test is no mean feat. Many aspects of radio theory and practice have to be studied and understood. It's such a shame that so many see the exam as a necessary evil and an impediment to be surmounted in order to get on the air. Once they succeed, they become “operators” and tend to neglect the experimental aspects of the hobby and ongoing development of their skills.

It is an amateur hobby after all and none of us need to be modern-day Marconis or Einsteins. However, there is so much satisfaction and a sense of achievement to be gained by operating with some home-made equipment. It doesn't have to be a high-tech double-conversion transceiver, but there are many pieces of equipment, including accessories, that can be built without too much trouble or expense while learning by doing so.

One area open to true experimentation is antenna building. I am shocked when I see the prices of simple wire antennas that could be built at a fraction of the cost. The home-made antenna will work just as well as, if not better, than the commercial version. As home-made antennas are cheap to build, it follows that they are inexpensive to experiment with also.

Nowadays, there are many online kit suppliers about. Kit building is a great introduction to home construction. All components and easy to follow instructions are supplied. Kits are available which are suitable for beginners as well as for more experienced builders. They range from the simple projects such as dummy loads to high performance state of the art transceivers. Constructors can progress in stages as they gain experience and confidence. Some even progress to designing their own projects.

I have built many commercial kits in my time. The QCX QRP CW single band high-performance transceiver from QRP Labs is my latest. It only costs \$49, which is incredible value. You simply select the band required when ordering the kit. It costs less than €60 including postage. There is great internet support and advice available should problems be encountered. However, I must stress that this is not a beginners' project.

“QRP (low power) lends itself admirably to home-construction. As output power is low, inexpensive output transistors can be used. CW does not require the more sophisticated SSB circuitry, therefore QRP kits are not difficult to build and operate. Results can be amazing and very satisfying as well. QRP mobile operation is also great fun. CW is a wonderful skill to have great mode to operate. It's a pity so many ignore this mode when they have practiced so hard to pass the test. Oft-times, when the bands seem dead and no SSB signals can be heard, contacts with CW are still possible, even if signals are weak.

What saddens me in say the last twenty years or so is the lack of entries for the two annual IRTS construction awards, the Professor Folan and Kevin Freaney Shields. It's disappointing and a Pyrrhic victory to win by default as the only entrant. In fact some years there are no entries at all. This is a sad reflection on our hobby. In the early days of “wireless,” radio amateurs were true experimenters at the forefront of technical developments and innovation. In fact, until relatively recently, EIs held Experimenter Radio Licences. We were not just amateurs. This changed with the introduction of CEPT licence.

When I was first licensed back in 1980 there was a plethora of monthly radio magazines with lots of technical articles and home-made projects included. Radio Constructor, Wireless World and Ham Radio Today come to mind. Practical Wireless has survived but its content now mainly consists of commercial equipment reviews and advertisements, with a few technical articles thrown in.

I ask myself if I am just being a pessimist and a GOM (Grumpy Old Man). Perhaps I am. I know that the hobby has moved on and maybe I am in a time warp. Maybe it's time to redefine the hobby? I hope not. I'd hate to see it become a radio operators' hobby, losing the experimental and learning aspects that has defined it so far.

I have considered writing some home-construction articles myself to try to inspire others. However, my fear is that I would be wasting my time and that nobody would be interested. I'd be thrilled to be proven wrong. Any feedback appreciated, positive or negative.

And by the way, I maintain a YouTube channel describing some of my home-made projects. Simply search under my call-sign EI5EM. I also maintain the EI QRP and Homebrew Page on Facebook. Feel free to join.

Sin a bhfuil go fóill ..... Slán

de Tony (EI5EM) ei5em@eircom.net





## Excerpts from the HX files Excerpt 048

*Pat Fitzpatrick EI2HX*

Hello and welcome to HX File number 048.

In this issue of Echo Ireland, the building a 23cms ATV transceiver that when completed will be used when I am over in the other brothers QTH. I tend to be over at least a couple of times during the week whether its to drink tea or to help with a chore or two, whilst I would often have a v/uhf hand held radio with me if there is only my self in the house some QSO's could be had, but sometimes I would have liked to have a ATV station setup so I could send a signal from his home to my own and I could be trying out different power levels and types of cameras.

### **The Boss**

So after some deep and meaningful negotiations with the brother's Boss, (his wife), the go ahead was given to install the equipment, the Bosses main concern was the location of the transmitter "yoke" and aerial when I was not there, I told her that I had a secure unit to keep the equipment safe and that she had the perfect secret location for the "yoke".

So! If you really, really want to know, the transmitter was put into a bin bag and hidden behind the sofa. That was the transmitters location sorted out, the aerial to be used is an Alford slot type, and it would be mounted on a pre installed pole that was used to keep some power cables up and over a shed in the brothers back garden.

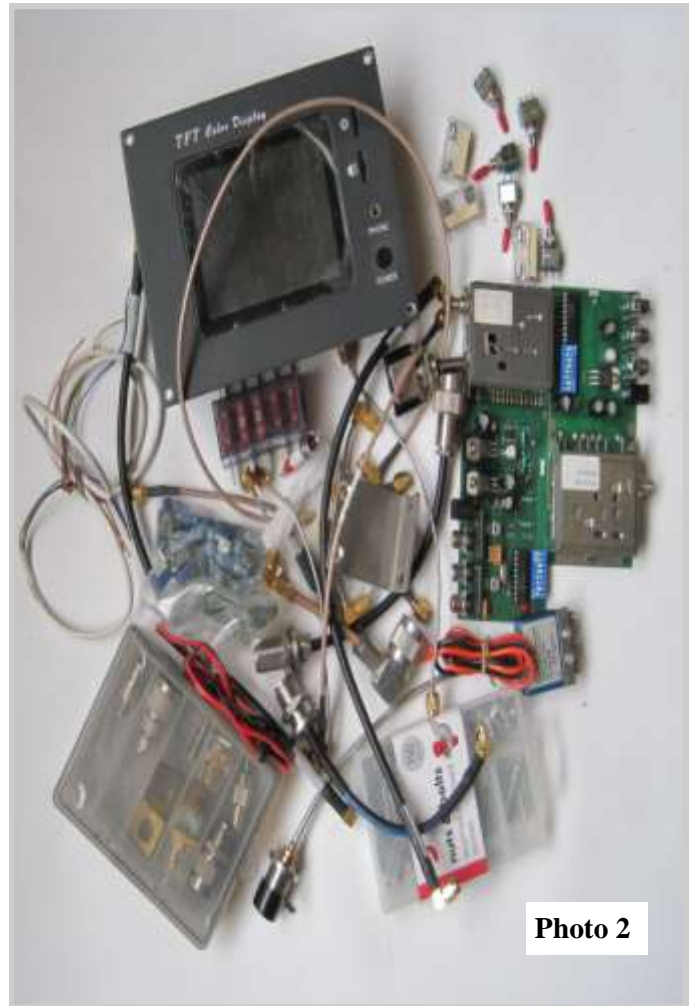
### **The Build**

The project box used for this transceiver was supplied to me by yet again the Squirrel, it was a decommissioned piece of equipment that still had a 7 amp power supply installed and a lot of other useful parts, some would end up in this project and the rest into the parts bins. Some pieces of a plastic number plate was cut to shape and used to mount the ATV boards and relay to the chassis. On the front panel the only major job was using a drill and a file to fit the monitor. As for the original holes in the front panel some micro switches were used, and as the unit was not using big amps these switches were more than good enough. Although the first template had the monitor in the middle I decided to place the monitor to one side as the units own original power supply was sort of half in the way and by doing this I was leaving a bit of space, having a plane to add 13cms and another monitor at a later date.



**Photo 1**

**Photo 1** shows the box as it was given to me before the unrequired items were removed, the front panel had a range of holes in a vertical line in the centre of it, and I might be able to use some of them in the design. There was no top panel but as the unit is an industry standard size (19 inch) I had a panel that would suit and that was one less part to worry about.



**Photo 2**

**Photo 2** is of some parts for the project, not all would be needed for this job, but whilst gathering the bits together it was handy to get some different lengths of patch leads as the main layout would be finalised before the drilling and hammering started. There are an awful lot of wires for a wireless hobby, who knows, maybe everything in the future will have built-in Bluetooth connectivity and will only have to be placed in the right order to make it work.



**Photo 3**

**Photo 3** shows some of the cameras in stock. The four cameras shown are all colour, I have a couple of black and white ones that are infrared and waterproof but for the time being are lost in the spares department. Of the four cameras shown two are picture only, but the other two have sound. The keen eyed among you may be wondering why I may have included one of my toys in the photo, it is in fact a transmitting camera with sound, if you look close, the camera is in his mouth, and if you look down a bit, the start of the drop down part of the scarf is not a dirt mark but in fact the microphone. The dome camera at the top of the picture uses the remote on its right and it will pan and tilt and it has an auto focus but no zoom.



**Photo 4**

**Photo 4** was taken after the final fitting, but before a coat of paint was added, and as mentioned earlier not all the pre drilled holes were used, some were left alone and a couple had switches fitted thinking ahead of the future addition to be made.

### In Use

Using a slot aerial in both locations meant that there was no need to line anything up and no doubt that saved a few trips up and down the stairs if a beam was to be used at either end. I know it all sounds a bit messy, but on a planned visit to the brother I would leave a video recorder and the ATV receiver running one end of town and switching on the transmitter on a visit to the far side of town. Two power levels are available to me, 50mw and a mighty 10 watts, but on some occasions no doubt I will bring up some of the other projects made over the years to give them an airing. The transceiver end of the coaxial cable would be wound up and placed in a bin bag and kept in the shed until needed. You may be wondering why the transceiver is not in the shed and the shed used as a shack, the shed is not exactly waterproof and as a result fairly damp, so not a lot stored in it.

### And Finally

That's all for this issue of the HX files, I hope to see you at the I.R.T.S. AGM in Carlow on the 18<sup>th</sup> and 19<sup>th</sup> of April, more details can be found elsewhere in this issue of Echo Ireland.

73's and may your signals be P5.  
Pat EI2HX



# Digital Radio Development in Ireland

Steve Wright EI5DD



D-Star was developed for amateur radio use and the first hardware was released in 2004. In 2012 Yaesu released their new C4FM based Fusion system which was based on the P25 system. DMR was released for commercial use around 2010. Much controversy surrounded D-Star and Yaesu Fusion. It was frequently stated that these were expensive and exclusive to their manufactures. DMR, whilst not designed for amateur radio use, slowly drew an interest as cheap Chinese DMR radios were readily available. Other modes such as P25 and NXDN have, more recently, been employed by radio amateurs.

Northern Ireland had installed their first Digital Repeater, GB7WT, an ICOM D-Star Repeater, in 2008. This was followed later by GB7NI and GB7DN both ICOM D-Star Repeaters. In addition there are DMR and multimode Repeaters and Gateways established in Northern Ireland and a wealth of information covering Northern Ireland repeaters is available from <http://digitalhamireland.com/>

The interest was growing in Ireland, but without some infrastructure it was not going to develop quickly. Initially, Steve EI5DD wrote promotional articles for Echo Ireland explaining how DMR and Yaesu Fusion operate and outlined plans for development in the Galway area. John M10AAZ, Steve EI5DD and Dave M0AUT were instrumental in negotiating and establishing the Brandmeister DMR server in Ireland under the supervision and operation by John Ronan EI7IG. With a Server in place it was possible to develop the Brandmeister DMR Network. To date this has been expedited by the Southern Ireland Repeater Network and the Galway Digital Radio Group who have spent time and a lot of money towards the development of a network in their respective areas.

It should be noted that there are other Networks in the form of the Phoenix and DMR+ Networks and these are widely used in the UK.

Without infrastructure, it was unlikely that any interest would follow. Something needed to be in place to encourage activity. Three years saw significant development. Sadly, there are only really two centres of activity with no facilities in between. One way around this problem is for individuals to set up a 2 Metre Multimode Gateway to serve their area. Six Multimode Gateways, well placed, would give access to the DMR, D-Star or Fusion Networks.

Three such Gateways could be placed in Limerick, Kerry and Cork and three spaced from Athlone to Dublin. Roscommon have a Multimode Digital Gateway under construction at present and this may be on air by the time Echo Ireland is printed.

## Building a Gateway

A multimode Gateway is a simple project to build as it only uses 3 components.

- 1) STM32\_DVM\_PiHat: Controller board \$85.00 available from <http://www.repeater-builder.com/products/stm32-dvm.html>
- 2) A Raspberry Pi 3 B+ approx. £36.00 maybe cheaper from E-Bay
- 3) A Tait Data radio pre-programmed to your frequency £50.00+ postage available from John Anderson M10AAZ at QTHR

An Automated Station License is required €100:00 from ComReg apply on the ComReg site.

**A total outlay of €280.00 at the most.**

It is probably wise to have a fan cooling the heatsink of the Radio if there is a lot of activity in the area.

The set up is simple by following the information below and no test gear is required.

Setting up such a gateway would provide excellent coverage in any area.

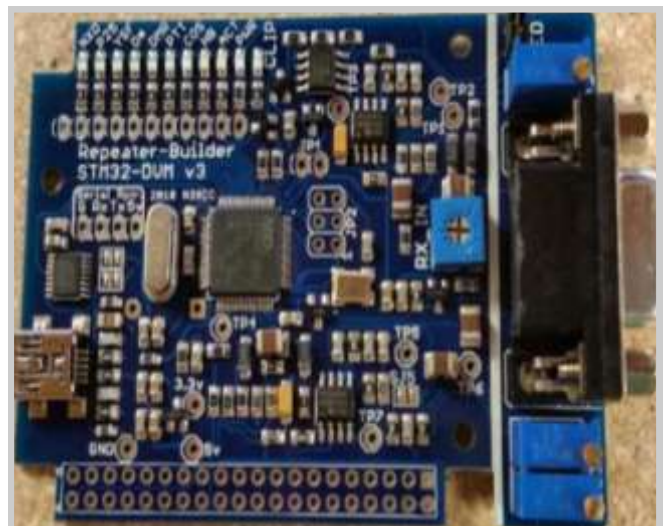
## Links to instructional videos

Craig Gagner W1MSG has supplied the following links:

- A video on how to adjust audio levels: <https://youtu.be/dYBRPLysazg>
- Info on the "expert" settings of Pi-Star: <https://www.youtube.com/watch?v=zzvRVaoIuXg>

## Components for the Gateway are illustrated below

### The STM32 Pi Hat Control Board





**Raspberry Pi 3 B+**

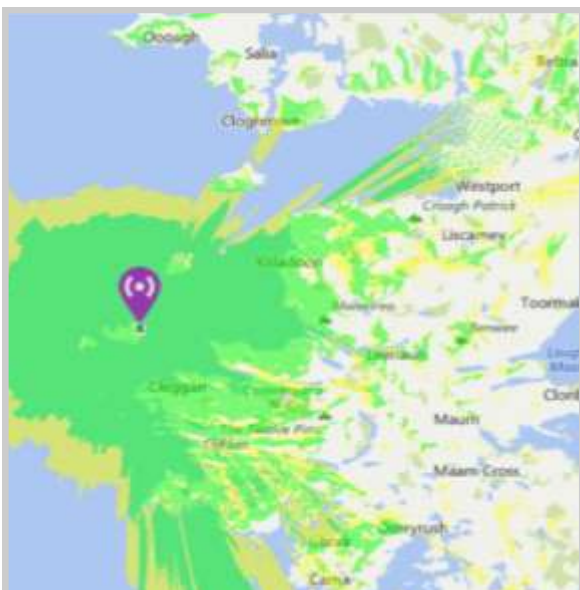


**Tait Data Radio**

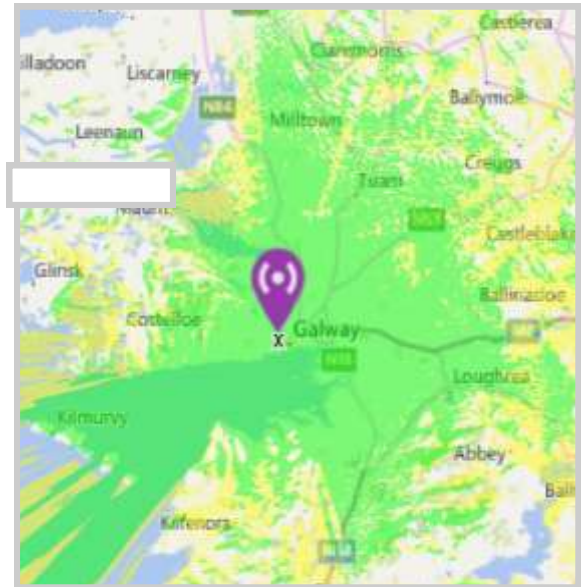


By combining the coverages of the individual DMR Repeaters in the Galway area, it is possible to get almost continuous coverage throughout the county and into neighbouring counties. A unique facility of DMR, is the facility to roam between repeaters in a similar fashion to the way the Cellular phone system works. This is set up for Galway at present. As one moves from one Repeater coverage area to the next, the radio will detect the signal strength of the Repeaters in the vicinity. Should one Repeater be at a reduced strength and another be at a higher strength, the radio will scan onto the stronger Repeater and seamlessly continue operation there. If the whole country had plenty of coverage it would be possible to roam from one Repeater to another for the duration of the journey.

**Inishbofin DMR Repeater EJ7IBD**



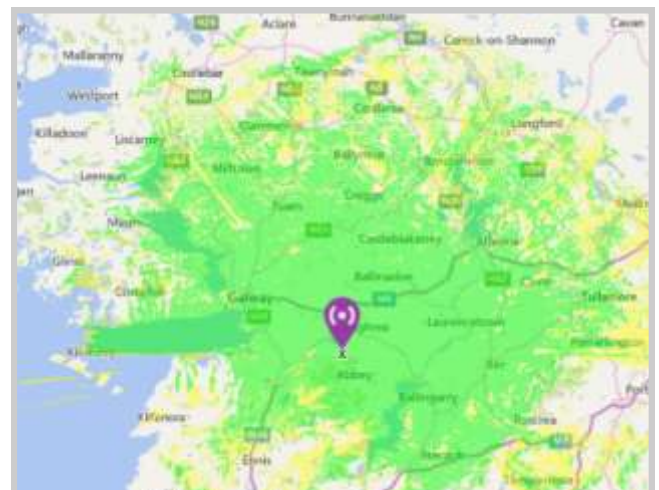
**Galway City DMR Repeater EI7RHD**



**Abbeyknockmoy DMR Repeater EI7AKR**

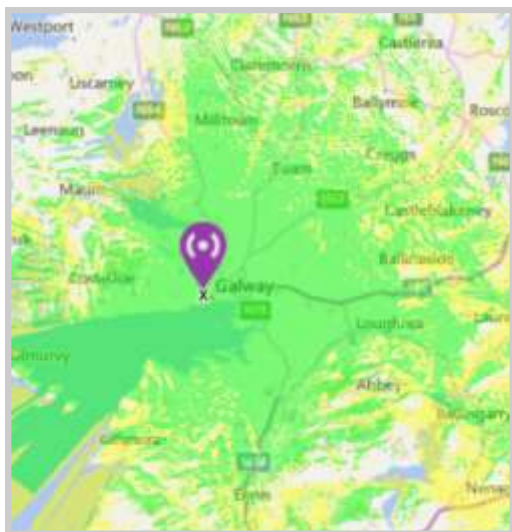


**Loughrea DMR Repeater EI7LRD**

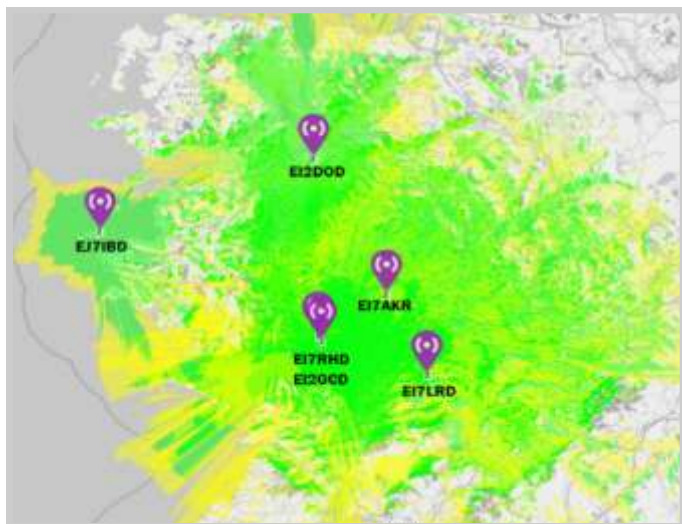




## Galway City Multimode Gateway EI2GCD



### The complete Galway DMR Network



## Southern Ireland Repeater Network

The first Multimode Digital Repeater was EI7CDD located at Carronadavderg, Co. Waterford and this was rapidly followed by EI7WCD located at Tramore, Co. Waterford and in 2019 EI7MLD was placed on Mt. Leinster Co. Carlow. The SIRM network covers a wide area and, as a result, there would be a higher number of registered DMR operators in the area covering Carlow, Kilkenny, Waterford and Cork. The Mount Leinster Repeater has opened an area to the north and to the outskirts of Dublin.

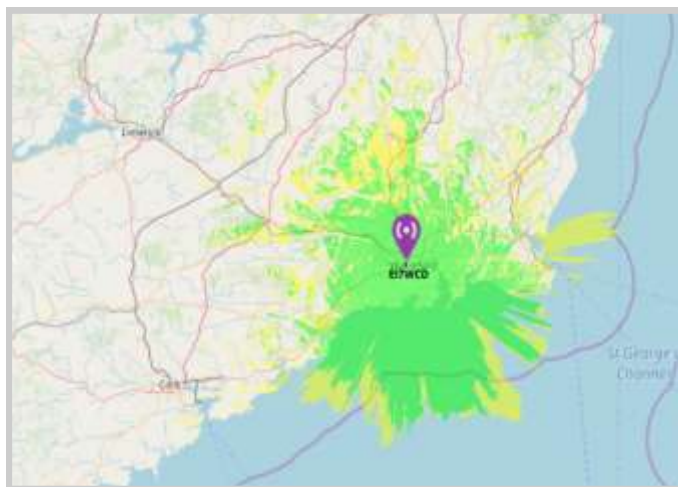
### EI7CDD Multimode



## Irish Digital Network TimeLine

- 2015** Limerick Radio club place a 2m Fusion Repeater, followed by a 70cm Fusion Repeater on air
- 2016** EI2JPG (Donegal) Fusion Repeater with Wires-X on air
- 2017** The Irish Brandmeister DMR Server is established in the Waterford Institute of Technology
- 2017** SIRM place a Multimode Digital Repeater, EI7CDD on air
- 2017** Mayo place a 2 metre Multimode Digital Gateway, EI2DOD, on air
- 2017** Galway place a 2 metre Multimode Digital Gateway, EI2GCD, on air
- 2018** SIRM place a second Multimode Digital Repeater on air
- 2018** Galway Place a 70cm Hytera DMR Repeater, EI7RHD on air overlooking Galway City
- 2018** Galway move the 2 metre Multimode Gateway to the to the EI7RHD site overlooking Galway City
- 2018** Galway Place a 2m Wires-X C4FM Gateway on air from Salthill, Galway
- 2019** SIRM place a Multimode Digital Repeater, EI7MLD, on Mount Leinster
- 2019** Galway place a Hytera DMR Repeater on Insibofin island beaming East (inland)
- 2019** Galway Place A Hytera DMR Repeater at Knockroe Abbeyknockmoy, Co. Galway
- 2020** EI2JPG (Donegal) Fusion Repeater with Wires-X on air
- 2020** Galway place A Hytera DMR Repeater, EI7LRD, on air from Knockroe Loughrea
- 2020** Galway place a Yaesu Fusion Repeater with Wires-X gateway on air from the Knockroe, Loughrea site

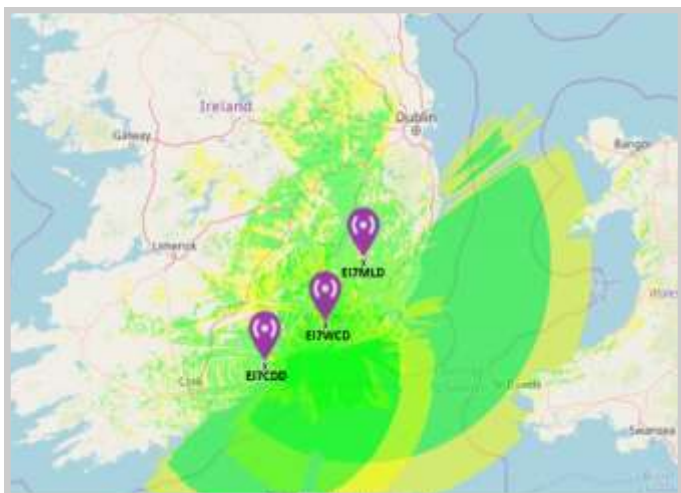
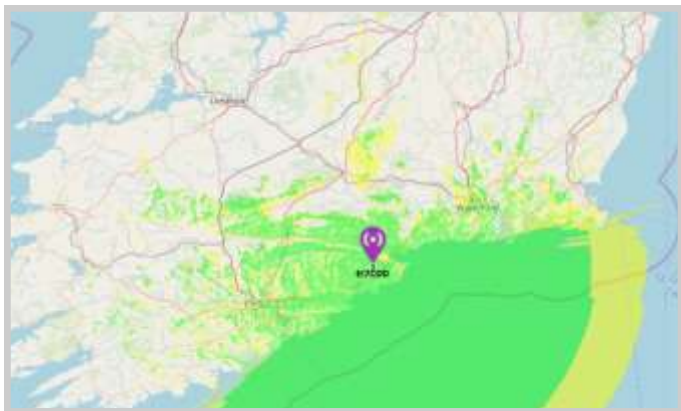
### EI7MLD Multimode Digital repeater



### EI7WCD Multimode Digital repeater



## EI7CDD Multimode Digital repeater



## Where is the DMR Network going from here?

SIRN are an active group and they undoubtedly have plans for further development of their Digital Network.

Galway's network is now "complete" although there is a Multimode Repeater to place on site and a D-Star Repeater under test but waiting for a D-Star Gateway to be added. It is now time to take a back seat and enjoy the facilities in the area. The additional facilities will be added later.

D-Star and Yaesu Fusion have not been forgotten and it should be noted that the South East have three Multimode Repeaters. Galway has multimode, and dedicated Repeaters for D-star and Fusion and Donegal have two Fusion Repeaters to the south and north of the county and the network will be expanded by adding Wires-X Gateway stations in the area.

### Roscommon Town

Paul, EI9HQB, has taken the initiative to build a Multimode 2 Metre Gateway which will operate on **144.8725 MHz** just outside of Roscommon Town. The Gateway will operate on DMR, Fusion and D-Star .

### Balla, Co. Mayo

Joe, EI3IX, has built a Multimode Digital Gateway, EI2DOD, capable of operating on DMR, D-Star and Fusion. It operated on **144.825 MHz**. Unfortunately this has been off air for almost a year and there are no definite plans to put it on air.

At the Coolmine Rally there were two enquiries about a posting showing the simplicity of building a 2m Multimode Digital Gateway. This may be promising and will surely see some activity on the Eastern side of the country. More well placed 2m Multimode Digital Gateways would surely fill in the gaps.

## Yaesu Fusion

The Yaesu Fusion System deserves a mention at this point as there are facilities already in place around the country.

The Limerick area were the first to set up a Fusion Repeater on Tountinna Mountain. It covered a huge area and was one of the reasons why Galway operators bought Fusion equipment.

The Repeater gave uniform coverage over a wide area and made it possible to communicate with Mayo operators. Limerick also purchased a 70cm Repeater. Neither of the systems had Wires-X facilities which would have brought in a wider interest. Sadly the 2m Repeater is off air until further notice but the 70cm Repeater remains active.

Galway Purchased a Fusion Repeater in 2017 and this to be installed at the Loughrea site next to the DMR system. Wires-X facilities will operate on this Repeater making it possible to route a call anywhere around the world. A Wires-X Gateway, EI2SHD, is currently operating from Salthill in Galway. It is covering Galway City and surrounding areas.

### Ei2GCD Wires-X Gateway



## National DRM Repeater Network





Donegal has two active Fusion Repeaters. EI2IPG is located at Carndonagh, Co. Donegal and EI2JPG located at St. John's point, Co. Donegal. They plan to encourage the use of Wires-X Gateways in the area to complement their network.



The Multimode Repeaters can not implement Yaesu Fusion. The YSF network is used on the Multimode systems and operates in much the same way as Wires-X.

The YSF network is accessible from Hotspots and Multimode Gateways or Repeaters. There is also another Fusion system "FCS" which also has a large number of Reflectors. Neither YSF or FCS are compatible with the Wires-X System despite their similarities.

It is now down to Amateur Radio operators the facilities to derive the most benefit.

Call up to the Galway area and try out the facilities as they are there for all to use. The city and surrounds have DMR, Fusion and D-Star Facilities. DMR is operable throughout the county and the Loughrea area covers DMR and Fusion. We hope to place something multimode in the southerly region of the county in the future. If you are close to the SIRM facilities there are plenty of opportunities to try out the different modes.

**EI2TBR Yaesu Fusion Repeater**



**EI2SHD Hytera DMR Repeater with EI2SHD on the second shelf**



Call through the system either direct or via a personal Hotspot. Don't make a call and turn off the radio if nothing comes back straight away. Your callsign will show up on a dashboard of a Repeater, Gateway or Hotspot and you may hear somebody several minutes to an hour later.

**Visit:** <https://galwayvhfgroup.blogspot.com/>  
[https://sirnrepeaters.blogspot.com/p/blog-page\\_2.html](https://sirnrepeaters.blogspot.com/p/blog-page_2.html)





## Frequencies for various Digimodes

A handy guide from *Alain F8FUA/EI2KM*

	FT4	FT8	PSK	RTTY	JT65	JT9	
160 m	?	1,840	1,838		1,838	1,839	160 m
80 m	3,575	3,573	3,580	3,590	3,570	3,572	80 m
40 m	7,047	7,074	7,040	7,043	7,076	7,078	40 m
30 m	10,140	10,136	10,141	10,143	10,138	10,140	30 m
20 m	14,080	14,074	14,070	14,080	14,076	14,078	20 m
17 m	18,104	18,100	18,098	18,105	18,102	18,104	17 m
15 m	21,140	21,074	21,070	21,080	21,076	21,078	15 m
12 m	24,919	24,915	24,920	24,925	24,917	24,919	12 m
10 m	28,180	28,074	28,070	28,080	28,076	28,078	10 m
10 m			28,120				10 m
6 m	50,318	50,313	50,305	50,600	50,310	50,312	6 m





## HF Happenings (and more)

Don Brennan EI6il ei65il1970@gmail.com

Hi Folks and welcome to a new edition of HF happenings. It's been a while so forgive the rust. I am glad to see Echo Ireland back up and running. If I may I would like to recap on the last few months so apologies for outdated information but may be of interest to some.

Last Summer brought some great HF conditions albeit in small doses sometimes only as little as magic 10 minute windows. I have said before that if you're not on the radio you can't work them. I often switch on and take a few minutes to check on the **NCDXF** beacons which give me a good indication of propagation. During dark winter months it wasn't unusual to find some beacons as far as Russia and South Africa on 10m. I know Doug **EI2CN** has put out some RF in recent times on 12m and reports good openings and small DX windows of opportunity. As also stated many times before it's not enough to arrive on a band with one quick spin of the VFO and determine that the band is dead. I would encourage operators to lookup the **NCDXF** frequencies and familiarise oneself with their operation.

If you are interested in radio propagation then the following website should be of interest. I find <https://dx.qsl.net/propagation/> to be the handiest daily propagation report.

Last Autumn the South Pacific made it to our shores with decent signals. Found conditions a little odd as the long path (LP) and short path (SP) were of equal strength for most of the early morning DX. My experience is that the Long and Short path are equal for a reasonably short period of time. I am satisfied that the 3 Element Steppir has a decent F/B ratio as both Doug **EI2CN** and I have carried out numerous front to back (F/B) tests over the years. One thing to note is my 2 element 40/30m antenna is probably a little too close to the 3 element Steppir which is approx. 2m above. I took antenna analyser screen captures and readings of the Steppir before installing the 2 element beam. It appears that my F/B ratio is slightly compromised due to a slight interaction between the antennas. That's another job on my Spring/Summer long finger !!

A while back I made a 20m ssb contact with Nobby **FW5JG** with the SFI 78, A33, K2, R26. Nobby went to great lengths to pull in Western EU often stopping the pileup and asking directly for G and EI. As conditions weakened he announced changing mode and frequency to FT8 14.090mhz Fox & Hound. This didn't work out too well as this portion of the band was taken up with a RTTY contest. Probably better to check the frequency before announcing a change.

I and other **EI's** were delighted to work Nicky **W1/EI9JF** on his stateside adventure. I caught him on his 20m ssb CQ with an immense signal 59 + as he was working remote stacked beams in upper New York State from the home of **W2RE**.

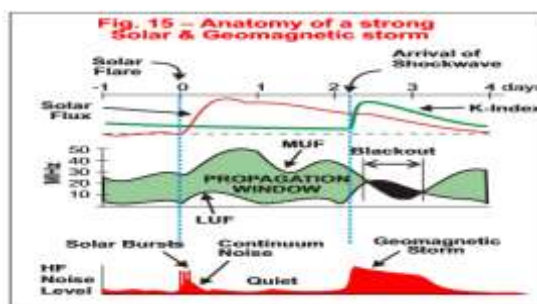
This station is worth a big Google as the drone footage will take you on an antenna farm tour. No hint whatsoever of latency on the transmission. I initially used 400 watts but backed up the bus and finished the QSO with 20 watts from my side.

I was delighted to work Jack **PH75AIR** from his balloon over Holland. Cracking signal 59+ as you would expect. The call sign was activated to commemorate and celebrate the 75<sup>th</sup> anniversary of operation Market Garden which in the summer of 1944, the Allies launched a daring airborne operation to secure the River Rhine crossings and advance into northern Germany. Although it ultimately failed to achieve its objectives, the determination and courage shown by the airborne troops and the units that assisted them made Market Garden one of the Second World War's (1939-45) most famous battles.

I came across **FW5JG**, **E51JD** and **KH7HI** causing a good stir when all on 20m ssb at the same time. Although not as strong as recent times they were all workable.

I worked **AL7TC** from Alaska on 20m FT8 @09:45z. His location is to the West of Lazy Mountain Alaska. I recently took more of an interest in Solar and Geomagnetic numbers as I listened to a discussion on 20m between two US hams in particular radio blackouts.

I learned that right after a flare is an excellent window for QRPers. As soon as the solar storm ceases, HF noise levels become quiet with an elevated MUF, lasting until sundown. Night time conditions on 80-40M can be excellent. The daytime MUF and the next day may be elevated as well. Shortly after day 2, the shockwave arrives, compressing our magnetic field and triggering a major geomagnetic storm. HF noise levels immediately rise, and in severe cases, may cause an HF blackout. Electrons from the shockwave enter the earth at the poles, causing a Polar Cap Absorption (PCA) event. This causes blackout conditions on HF in the higher latitudes. The next 3-hourly K-Index will be high (6-9), sufficient to also trigger auroral activity. A major geomagnetic storm ( $K > 6$ ) can last 12-24 hours. When it finally subsides, our magnetic field often becomes very quiet, producing low noise levels on HF. This is the other window for QRPers, when the geomagnetic storm subsides. Nighttime noise levels on 40-80M can be very low.





This article historically is called **HF happenings** but I can't see anyone doing a rain dance if we report on the magic 6 meter band. The usual suspects were working each other over and over again sometimes day in and day out.

I was sitting on 93 DXCC entities with 100 in my scope. Conditions picked up logging two new countries Turkish station **TA9J** on 50.313 MHz @07:50z followed by **EK7DX** in Armenia.

Good things come to the DX hunter when I got a tipoff from a well known DXpeditioner in James Road Dublin that **TR8CA** was knocking about 6m FT8. Nailed him after 2 calls @ 18:55z and then shifted frequency to 50.107 MHz CW for a sniff of **TZ4AM** in Mali West Africa. I could just about hear tones on the freq. at first while Declan **EI6FR** only 50 km's to the South of me could hear him with a RSSI (Received Signal Strength Indication) of 549. That's the magic band for ya so I sat it out and he made his way into my log within a few min's exchanging a real 559. That was my 96<sup>th</sup> DXCC entity on 6m. Who says "CW is dead and gone and buried with Marconi in the grave". Both 6m contacts were Multi-hop Sporadic E propagation.

Late 6m season brought big evenings and nights on 6m with the Caribbean and South America streaming across the big pond as Multi-hop Sporadic E was the flavour of the moment. Most of the usual culprits were on from both sides of the Atlantic with the Southern EI's doing a lot better than those at a Northern latitude.

The 6m band is another kettle of fish as it can have extreme QSB signals within seconds. I heard it described as sometimes "light switch" propagation. Folks often make the mistake of jumping onto a Spot frequency for a short period of time. If you really want some new/rare station's then it's a hurry up and wait situation. Just park up the bus and hang in there as sometimes the 6m openings are only seconds and if your lucky minutes in duration.

The bold 6m didn't appear to be bear the same fruit as last year as the lads further South were living the dream working JA and the Far East. Most of the action is also on FT8 which for some folks can be soul destroying looking at the computer screen.

I could hear the odd partial callsign from **CY9C** on 50.150 MHz @ 21:09z. Parked my 6 element 6m beam out to St. Paul and sat on 50.150 MHz for approx. ½ hour when they popped up calling EU. I logged them with one call at 21:20z. Threw out an alert on Whatsapp and it wasn't long before I heard **EI6FR** nail them as well. New country for both of us on 6m so happy out.

It was a relatively poor season on 6m even compared to 2018. I was sitting on 96 entities and managed to get over the 100 line on June 25<sup>th</sup> by logging **JE6KYA** in Japan for the first time. That was a memorable QSO as I missed a few small openings in 2018 while at work !!. 6m appears to be the "right place at the right time band".

If interested one can fire up 6m on 50.280 MHz **MSK144** during early morning typically just after sunrise and work 6m Meteor Scatter. I'm not an expert on 6m but believe most

activity on **MSK144** mode occurs around 50.280 MHz and the software in use appears to be either the long running and well known **WSJT** or the newer **MSHV** by **LZ2HV**.



**GOISW** is an avid Meteor Scatter op and explains the process as follows.

"Meteor scatter (MS) is the reflection of radio signals from the ionised trails from Meteors (Iron Rocks) burning up in the upper atmosphere. This effect can be used by radio amateurs to make contacts at distances of up to around 2,200km.

Meteors burn up in the atmosphere at a height of between 90-105km. The ionised meteorite trail will reflect VHF radio signals, which would otherwise travel straight into Space. Meteor Scatter radio contacts rely on multiple meteors to reflect small parts of each message over a period of time, usually around 20 minutes, but sometimes up to 1 hour. The mostly metallic (iron) meteors burn up in the atmosphere and leave an ionised trail of particles, which VHF radio signals can bounce off, for any time period from 100 milliseconds to over 2 minutes. The frequent time for reflections is often around 250 milliseconds or just a quarter of a second!

You haven't time to speak normally, so you can use a series of audio tones to represent each letter of the alphabet and play this through your radio using a computer soundcard. You speed up the tones so that your short message instead of lasting perhaps 20 seconds, is transmitted in under 0.25 seconds, repeatedly over and over again.

Imagine a spy radio 'burst transmitter' sending a secret Morse Code message at hundreds of letters per minute very, very quickly to avoid detection and direction finding by the enemy! The techniques used for Meteor Scatter communication speeds are quite similar.

The receiving station listens and when a meteor is in just the right place he/she will hear your signal and then they slow your message down again to read it, using their computer soundcard and WSJT software. You take it in turns to transmit and receive in set periods of every 30 seconds. Over 20 minutes, on average, the entire message is transferred in both directions to complete the contact. In this time maybe 4-6 meteors will occur.

Meteors may come at any time, but sometimes they come in showers, which can be predicted. During showers there are more meteors than usual and QSOs (contacts) are easier to make. Most work on 144 MHz is done during Meteor Showers.

A MS trail reflects 50MHz for longer time than 144MHz, so it is easier to work MS on 50MHz.

Most work on 144 MHz is done during Meteor Showers. A MS trail reflects 50MHz for longer time than 144MHz, so it is easier to work MS on 50MHz.

I was on the hunt for new IOTA AS-205 callsign **R205NEW** and came across them on 20m cw. Their signal was rock bottom even with the 3 el Steppir at 22m. I entered their callsign into Logger32 which gave me a QTF (beam heading) of 48 degrees but noted their signal was weak as a hungry kitten. I usually beam around 20 degrees for Eugene **RA0FF** on Sakhalin Island which isn't too far up the road so I turned the beam slowly to 350 degrees and it made an incredible difference. Their signal came up to a good 549. On HF I wouldn't argue over +/- 20 degrees. I tried for a good half hour but no joy due to the immense pileup. It could be just a skew path. They disappeared off the frequency probably for the big jumbo breakfast roll so left the radio on their freq while filling out a few direct QSL cards. The plan worked as **R205NEW** burst back onto the freq and I caught him on his simplex CQ. In the log and happy days to get a brand new IOTA AS-205.

I worked an Alaskan station **AL7KC** who explained he used to work on a direction finding array called **AN/FLR-9**.



The **AN/FLR-9** is a type of very large circular "Wullenweber" antenna array, built at eight locations during the cold war for HF/DF direction finding of high priority targets. The worldwide network, known collectively as "Iron Horse", could locate HF communications almost anywhere on the planet. Because of the exceptionally large size of its outer reflecting screen (1056 vertical steel wires supported by 96 120-foot towers), the FLR-9 was commonly referred to by the nickname "Elephant Cage." Constructed in the early to mid 1960s, in May 2016 the last operational FLR-9 at Joint Base Elmendorf-Richardson in Alaska was decommissioned. It can be confused with the US Navy's AN/FRD-10, which also used a Wullenweber antenna.

I was on holidays in the States from the end of June to the end of July 2019. I brought my FT857 on the trip and hung up a 20m dipole from the trees in my brothers back garden approx. 20 miles NE of Philadelphia City. I travelled light only bringing the bare radio as I had left Co-ax, antenna etc on my last trip.

I was thrilled to work **EI6FR**, **EI2CN** and **EI9JF** on CW with approx. 70 watts from my simple setup. 20m was laced with late night rag chewers which we generally don't hear from our side of the pond. It was like the top end of 80m. I was surprised when many USA stations reported they never

My stateside nephew and I visited the local Delaware Valley Radio Amateur Club and what a welcome we got. I got on the radio and first up from across the pond was Hugh **EI2HI** with 100 watts, followed by all the usual suspects from **EI**. Big congrats to Keith **EI5KO** also breaking through the 20m pileup with only 100 watts and homebrew Cobweb. Our host was Cliff **WA2TMF** an absolute gentleman who made us feel so at home.

Cliff had some interesting stories about his time on air from the challenging environment of New York City.

"After working for two major Japanese electronic consumer manufacturers as an electrical engineer, project manager and technical training instructor, I have retired. Now I have plenty of time to get the 3 DXCC countries I'm missing. Not sure about a P5 but maybe someday things will change.

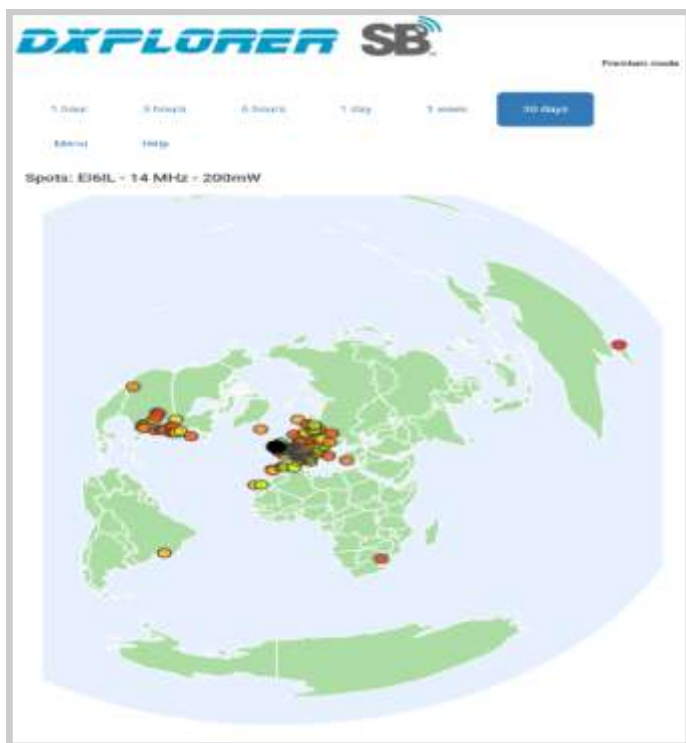
When I was living in New York City, operating a radio station was quite a challenging task. All of my antennas were hidden and made of wire, usually 24-gauge magnet wire. I remember stringing a 160-meter half-wave dipole across 5 six-story apartment building roofs dodging city traffic and curious pedestrians. Obtaining a good ground was nearly impossible and my lips were always getting burned from the RF bleeding off the microphone. I eventually bribed my apartment custodian with several bottles of Vodka in exchange for a very limited space on the roof. Then, experimenting with fixed wire beams, my 6-element 18-gauge 20-meter wire beam and 50 watts busted through two pileups (CW and SSB) contacting the long awaited **ZA1A** after years of radio silence. (Sept 24/25 1991)

I have never operated over 100 watts and never owned a commercially made antenna! I have worked the world on pieces of wire "





Below is a screenshot of where my 200mW WSPRlite beacon transmissions were received from mid Mar to mid April 2020. The antenna used was a 20m base loaded vertical mobile whip to see how far my wee signal could be heard. As one can see it hit all the way from the West coast USA to VK land and South America. This proves that there are reasonable propagation conditions albeit small windows of DX opportunity. I plan to use a 20m resonant Inverted V dipole for a month's trial. Remember folks this type of antenna would fit in most gardens so try to send out a dits + dahs and maybe report back in to Echo Ireland with your own experiences.



#### XT2BR – Burkina Faso

Alain, was active during Nov 19 from Burkina Faso and reports good success on the lower bands with the aid of a homebrew Receive loop.

#### HH2AA – Haiti

Quite active and is a full solar powered battery site remote station apparently from the US.

#### 4U1UN – United Nations New York

I was delighted to work 4U1UN for a new DXCC on 40M and 20m CW. New DXCC entity's have become a famine as I am now sitting on 329 confirmed DXCC entities. The DX community is eagerly waiting on Bouvet as The Rebel DX Group report they will attempt to activate next winter. We shall see !!

#### 5N7Q – Nigeria

This call is not permanent in Nigeria but goes there for service or maintenance of broadcasting stations. He is QRV with wonderful antennas. It's one of the largest fully rotatable short wave antennas in the world. The antenna gain is over 20dBi on all bands from 10m-40m. usually with no more than 100 watts.



The latest International Amateur Radio Union Region 1 Monitoring System (IARUMS) reports the Russian “Contayner” over-the-horizon radar (OTHR) has been active in the 7, 10, 14, and 18 MHz amateur radio allocations (amateur radio is primary on 40, 20, and 17 meters). The OTHR transmissions have been 40 sweeps/second, FM on pulse, and 12 kHz wide. These transmissions can be a nuisance when trying to work a rare DX station. Additionally, IARUMS reports a significant increase in Russian military traffic using F1B, PSK, and orthogonal frequency division multiplex (OFDM) on 40, 30, 20, and 15 meters.

IARUMS on November 13 reported an OTHR in northern Iran on 6.078 – 7.022 MHz, AM on pulse, 81 sweeps/second, 44 kHz wide.

The following is a list of some of the stations worked over the last few months under famine conditions.....

**10M** – A82X, A82Z, D68CCC

**12M** - 6O7O, A82X, D68CCC

**15M** – TO80SP, A82X, BG7SFE, 3W3B, YC1MIG, XV1X, 5K0K, VP6R, 9G2HO, D68CCC, S92HP, C5FUD, ZL1NA/MM

**17M** – T6AA, E21EIC, VR2XYL, 4F3BZ, A41ZZ, DU1IST, JA3QLG, EI2KJ, RD4D, A82X, TO80SP, 5K0K, VP6R, D68CCC, HS0ZOM, XT2BR, BI8DHZ, 5N7Q, TO9W, HP9SAM, AP2HA, C5GCJ, 3B8CW, VP5D, VU2MB, TO7D, HU1DL, KP4/AA7CH. YO7BPC, 5I4ZZ, 5H4WZ, E44CC, 5I5TT, TU5PCT

PY7PX, VR2UPU, ZC4UW, FG/F6ITU, T6AA, HC1MD/2, PY5EJ, VK3OCD, VK2PH, HU1DL, 5I5TT, 5H4WZ, E44CC, 5I4ZZ, E44CC, ZL1NA/MM, PY0FF, TU5PCT, 9Q1C, VP8PJ



**20M** - TC0Z, T6AA, HB9BIN/P, ZM1A, KL7SB, KH6/DL8UI, C21WW, WH0RU, 3D2AG, 3D2MP, JA1AFR, OJ0JR, HQ9X, HR9/SP4Z, 3DA0AO, A82X, TO80SP, 5H3CA, VP2V/N5AQ, KH7XS, K6T, NO6T, ZK3A, ZP6ARO, HK3Z, VP2VEM, HL1ZIX, BD8NBN, VP8LP, JR7ILA, OD5ZZ, XE1B, JY5HX, 7P8AO, KH7XS, VO1IRA, 5K0K, 5J500L, VP6R, KL7YK, D68CCC, VP6R, VK9NG, A92GE, XT2BR, TX7T, XE1CT, 5N7Q, PJ5/SP6IXF, 9L1YXJ, PY5DD, TO9W, K7BX/VP9, TO9W, 7X2YOTA, 5Z4/G3AB, 4U1UN, VK2VRC, EI/VA2EI, A6-0PWA, E20EHQ, ZZ1R, YB0AR, VK2PMG, 7X7X, PY7PX, VR2UPU, ZC4UW, FG/F6ITU, T6AA, HC1MD/2, PY5EJ, VK3OCD, VK2PH, HU1DL, 5I5TT, 5H4WZ, E44CC, 5I4ZZ, E44CC, ZL1NA/MM, PY0FF, TU5PCT, 9Q1C, VP8PJ

**30M** - T6AA, EX0QP, S92HP, ES2TT/2, JT5DX, C21WW, VK3EW, C21WW, 6O7O, 5H3RRC, A82X, TO80SP, ZK3A, VP2V/N5AQ, TT8SN, T30GC, KL7J, TO80SP, 7P8AO, 5K0K, VK9NC, VP6R, 6K5YIA, VK1MA, VP6R, D68CCC, JK3ZXX/2, XT2BR, YJ0RRC, 8Q7XR, 5R8VX, 5N7Q, 6W7PCT, TR8CR, TO9W, DP0GVN, EI6FR/P, HB9DGV/P, KL7J, KG6JDX, JT1BV, DS5USH, YB2TX, 3D2AG/P, ZC4UW, VK9NK, C5FUD, HU1DL, 5H4WZ, E44CC, 5I4ZZ, 5H4WZ, 5I5TT, PJ4/NE9U, ZL1NA/MM, VP8PJ

**40M** - 9U3TMM, 9W8MAD, 6O7O, 3D2AG, VK3ATO, EV0BREST, ZK3A, T6AA, A82X, VP2VEM, TO80SP, OH8X, 7P8AO, YC1MIG, BI8DHZ, 5K0K, D68CCC, VP6R, VK9NG, YJ0RRC, XT2BR, 5N7Q, 5H3UA, PJ5/SP6IXF, 6W7PCT, 5U9AMO, PJ5/SP6EQZ, KH2L, TO9W, 4U1UN, A50BOC, A50BOC, Z68MA, 4U1XMAS, ZL6YOTA, PY6/PP2RON, 7X7X, KH2L, DS3CHK, HB9DGV/P, T6AA, ZC4UW, E44RU, ZL4RMF, ZS7ANF, ZW6C, VK9NK, HU1DL, PP2RON, E44CC, 5I4ZZ, E44CC, 5H4WZ, 5I5TT, 9Q1C, 5H4WZ, 5I5TT, ZL1NA/MM, 6W1/EA4ATI, 8Q7HK

**80M** - HR9/SP4Z, 8R1/AH0G, RK4FF, PB0AKY, NN2T, RX4CD, PA3GHJ, R2EC, UY2IS, 4X4MF, 9Z4Y, A82X, TO80SP, 7P8AO, YV4NY, ZL2OK, CX6VM, SV2AEL/J, 5K0K, 5T2KW, D4C, M6T, VP6R, VK6IR, D68CCC, XT2BR, T6AA, TX7T, 5N7Q, VK9CZ, ZD7W, PJ5/SP6IXF, KP4JRS, PJ5/SP6EQZ, Z68MA, P4/DL6RAI, ZL4AS, KB6C, EI3ISB, C31MF, JH1AJT, 7X7X, ZC4UW, YS1RR, TT8SN, TI9A, HU1DL, E44CC, 5I5TT

**160M** - JT5DX, 9K2OD, K3WC, V51B, TO80SP, 3V8SF, A82X, 9K2YM, OY1R, JF8QNF, JA8KSF, 5K0K, D68CCC, VY2NA/VE2, VP6R, VY2NA/VE2, RJ6J, WN6W, EI6JK, 9G2HO, R2EA, PV8ABC, SG5Z, XE2RT, WB8JUI, 8R1/AG6UT, P40C, 4O7CC, PJ5/SP6EQZ, J35X, HC2AO, OK1EP, 4S7AB, A50BOC, HI3AA, W6AYC, W7YA, NE0DX, WB8JUI, KC8IQ, BD4WN, RD9U, N8KDX, TO2O, DJ1AA, W2FU, KB7IJ, 7X7X, HK3W, WP4KMB, YU/IV3FSG, UR5QBB, J68HZ, VO2AC, OD5VB, HU1DL, XE1MW, K4KEW, FS/VA7XW, KS4YT, 5I4ZZ, TI7/G3WPH

At the time of writing the RV Braveheart delivered members of the **Perseverance DX Group** to Signy Island ....**South Orkney Islands** (IOTA AN-008). They are on air 24x7 call-sign **VP8PJ** and so far I have heard and saw many EI's get into their log. Best of luck to all those who worked the South Orkney's for an ATNO (All time new one) So that's it for now folks. It's been a testing time lately particularly on our antennas, rotators, towers etc. A pickup in the weather is very welcome and a new DXCC entity would be most welcome !! Take it easy for now, maybe someone out there could send in a paragraph or two of their experiences on the bands.

73 for now,

The following stations plan to be active in the next few months but, don't be surprised if there are more cancellations due to the Corona Virus travel directions,

March						
2020 Mar01	2020 Mar03	Solomon Is	P29	EA5GL	AA4NC 20200217	AA4NC H44NC
2020 Mar02	2020 Mar09	Bonaire	PJ4/K5KG NEW	LoTW	TDDX 20200223	K5KG
2020 Mar02	2020 Mar13	Panama	H33K	LoTW	HP3AK 20200214	HP1DAV
2020 Mar03	2020 Mar06	Vanuatu	YJ0NC	EA5GL	AA4NC 20191213	AA4NC
2020 Mar04	2020 Mar15	Zambia	9J2LA	M0OXO	DXW.Net 20190514	LA3BO
2020 Mar04	2020 Mar16	Reunion	TO7DL NEW	LoTW	DXW.Net 20200224	DL7DF IOTA AF-016
2020 Mar04	2020 Mar22	Rwanda	9X2AW NEW	LoTW	TDDX 20200226	DF2WO fm Kigali
2020 Mar06	2020 Mar13	Antigua	V26FP	LoTW	DXNews 20191130	1W2NEF fm IOTA NA-100
2020 Mar06	2020 Mar17	Kyrgystan	EX0QR	Club Log OQRS	DXW.Net 20200219	By R2DY fm the south shore of Issyk Kul
2020 Mar06	2020 Apr01	Madeira	CT9/DL3KWR NEW	LoTW	TDDX 20200225	DL3KWR
April						
2020 Apr06	2020 Apr14	St Vincent	J88PI	GW4D VB	DXW.Net 20190625	Palm I, IOTA NA-025
2020 Apr10	2020 Apr13	Svalbard	JW/DC8TM	DC8TM Buro	DXW.Net 20200217	DC8TM
2020 Apr14	2020 May13	Guatemala	TG9BBV	VE7BV	TDDX 20200115	VE7BV;
2020 Apr17	2020 Apr25	Philippines	DU2/SP5APW	LoTW	425DXN 20200208	IOTA OC-092
May						
2020 May01	2020 May22	Botswana	A25VR	VE7VR	TDDX 20200130	VE7VR

# *The Incurable Virus*

by Tony EI5EM



A fellow EI recently said that he suspected me of being infected with the HB virus. It is an incurable, chronic, lifelong disease. Its symptoms can be alleviated temporarily from time to time but they always return. However the Homebrew virus, to give it its full name, is not fatal.

I have been suffering from this disease since I was a teenager. It is hereditary. My father before me (1910-2003), though never a radio amateur, was also infected and obviously passed it on to me. He was a great SWL and I have great memories of sitting with him listening to broadcast stations from around the world. He would send off reception reports and we would wait eagerly for the QSL cards to arrive.

My father would buy some of the radio magazines and I was fascinated by some of the practical projects described. In 1964, my Aunt Alice bought me a Philips home constructor kit for Christmas. I was in seventh heaven. All the components and instructions were included for over twenty electronic projects. The circuits were constructed on a hardboard base board with spring terminals for the components with overlay cards indicating their locations. I date the first onset of the virus symptoms back to then.

The first receiver I built was in 1966. It was advertised in one of the radio magazines and cost less than 30/- (€2) including delivery from the UK. It was the HAC (Hear All Continents) single valve regenerative receiver with plug-in green Denco coils for the various short-wave bands. It was powered by an Ever Ready Winner 120 Volt HT battery and a 3 Volt heater. My father strung out a random length wire antenna for me. I later added a second valve and enjoyed years of fun with that simple receiver. I subsequently built the Pocket 5 and Roamer 7 kits also advertised in the radio periodicals. The latter included the marine/ trawler band and listening to QSOs was fascinating.

When I started working, home-brewing was put aside for several years as I could then afford commercial equipment. My first was a National Panasonic with SW bands followed by the Yaesu FRG-7 in the mid 1970s. It was through listening on the FRG-7 that I was introduced to CB radio, which was all the go in the second half of the 1970s. But as the Solar Cycle 21 began to decline, I realised that 27 MHz would decline with it. With that in mind, I sat the theory test in 1980 (EI6AEB) and obtained my current call-sign in 1981.

Having gained a lot of theoretical knowledge, the HB virus manifested itself once again. QRP projects began to appear in the literature and I joined the G-QRP Club. I built the DSB80 double sideband transceiver and the PW Severn. The Severn was a CW DSB transceiver which I modified until it became unrecognisable from the original. I added a homebrew 20 Watt outboard amplifier as well. I worked fantastic stuff with that rig.

However, the virus really became acute when I decided to build a 7 MHz CW transceiver from scratch. I borrowed circuits from many sources and spent about two years building and optimising what I christened The Bosca 40. It incorporated a memory keyer, a digital display, an ATU and an active audio filter. I managed to squeeze it all into one box and learned so much from building that unique transceiver.

I have built so many kit projects since, including Elecraft KX1, K1, K uBITX, QCX etc. However, designing and building my own equipment gives me the most pleasure. I am retired now since 2015 and have more time to spend visualising, designing and building projects. Some I build simply for the enjoyment, knowledge and sense of satisfaction I derive from doing so.

Recently completed projects include a Cobweb HF antenna, a touch sensitive iambic paddles and a memory keyer. I am currently working on a magnetic loop antenna. There is always something new to build over the horizon. I have founded a support group for fellow HB virus sufferers on Facebook. It is the EI QRP and Homebrew Group. If you are a sufferer or even if not, then why not join us? I also have a YouTube Channel with almost fifty clips of some of my projects. It can be found by searching under EI5EM on YouTube.

Part of amateur radio is continuous training and what better way is there to train than by building kits or other pieces of equipment or antennas? The pure satisfaction of using homebrew equipment is magical.

In conclusion, I have to say that I don't believe that medical science, wonderful as it is, will produce a cure for the HB virus in my lifetime. But if it does, I have doubts that I would even consider taking the medication. The psychological side effects might be worse than the cure. So I will have to continue suffering until I become an SK. I have no qualms about infecting others with the virus in the meantime either.

Sin a bhfuil go fóill

de Tony (EI5EM)

ei5echomike@gmail.com





# **Irish Radio Transmitters Society**

## **88<sup>th</sup> Annual AGM Weekend**

**Hosted By**  
**The South Eastern Amateur**  
**Radio Group EI2WRC**



**Saturday & Sunday 18<sup>th</sup>/19<sup>th</sup> April 2020**  
**Woodford Dolmen Hotel, Kilkenny Road, Carlow**



**The Woodford Dolmen Hotel, Kilkenny Road, Carlow**  
**Room Rates For AGM Weekend**  
**Fri/Sat, Single including two breakfasts and one evening meal €254**  
**Fri/Sat, Double including two breakfasts and one evening meal €288**  
**Sat, Single including breakfast €139**  
**Sat, Double including breakfast €149**  
**Please use the code IRTS2020 when booking**  
**Hotel Reception 059 9142002**

**Gala Dinner Tickets will be available once printed €35 per person**

**For general inquiries about the AGM weekend please contact Sean**  
**EI2HZB on 083 4713001 or via email to [agm2020cw@gmail.com](mailto:agm2020cw@gmail.com)**





***88<sup>th</sup> Annual Irish Radio Transmitters Society  
AGM Gala Dinner  
Saturday 18<sup>th</sup> April 2020 7:30p.m.***



**Chef's Homemade Cream of Vegetable Soup**

**or**

**Cajun Chicken Salad chargrilled chicken breast with tossed salad, mango & cucumber topped with a spicy mayonnaise dressing**



**Roast Rib of Irish Beef served with Yorkshire pudding and rich roast gravy**

**or**

**Baked Fillet of Atlantic Salmon wrapped in filo pastry with cream cheese asparagus, finished with white wine cream sauce**



**Deep Filled Warm Apple Pie with vanilla ice-cream**



**Tea/Coffee**



***Please note: A vegetarian option will be available and anyone with specific dietary needs are asked to contact the hotel at least 72 hours prior to the event***



## Silent Key EI8EC

Tom (Thomás) Finucane, late of Bray, Co. Wicklow and formerly of 27 St. Canice's Road, Glasnevin, passed away peacefully, surrounded by his loving family on 15th January, 2020, at Blackrock Clinic, beloved husband of Aileen, much loved Dad of Kirsten, Suzanne and Robyn, cherished Grandad of Sami, Aisha, Jamie, Mia and Jake, deeply regretted by his sons-in-law Pat and Guillermo, brother Noel, sisters Thérèse and Dorothy, nieces, nephews, relatives and friends. Reunited with his recently departed sister Marian Finucane Clarke.



*May he rest in peace*



## Silent Key EI2EO

The IRTS was advised of the death of Michael Hayes EI2EO in February 2019. Michael's family remember him as, "a radio man to the end". One of the last things that he had his daughter do for him before he became ill was to renew his IRTS membership in November 2018. His daughter recalled the "great pleasure he got out of the magazines and keeping up with the lads on the radio".

*Ar dheis Dé go raibh a h-anam dílis*

## Silent Key EI4BB



The IRTS was advised of the death of Brendan Daly EI4BB on 1st March 2020 surrounded by his loving family. Sadly missed by his loving wife Carmel, daughters Niamh, Fiona and Caroline, sons-in-law Ian, Colum and Ciarán, adored Gandhi of Cara, Aoife, Matthew, Saoirse, Dillon and Finn, sisters Carmel, Nuala and Maura, brother Joseph, sisters-in-law, brothers-in-law, nieces, nephews, extended family, neighbours and friends.

*Ar dheis Dé go raibh a h-anam dílis*

## Silent Key EI6D

The IRTS has been advised of the death of Leo Purcell EI6D. Leo served as President of the IRTS from 1968 to 1969. He resided in Dublin and Naas, Co. Kildare and passed away on the 16th February 2020 peacefully, after a short illness in the wonderful care of the staff at St Vincent's University Hospital. We extend our sympathy to his beloved wife Frances and much loved step-children Denis, Allison and Conor, daughters-in-law Maria and Helen, son-in-law Brian, his loving Grandchildren Ross, Gavin, Andrew, Paddy, Joseph, Rebekah, Isabelle, Alexandra, Philippa and extended family and friends.

*Ar dheis Dé go raibh a h-anam dílis*



EI DXCC Single Band Status as at 2nd March 2020												
Compiled by Joe Ryan EI7GY												
Pos	Call	160	80	40	30	20	17	15	12	10	6	2
11	EI4DQ	160	80	40	30	20	17	15	12	10	6	2
10	EI2GLB	160	80	40	30	20	17	15	12	10	6	
10	EI2JD	160	80	40	30	20	17	15	12	10	6	
10	EI3I0	160	80	40	30	20	17	15	12	10	6	
10	EI6FR	160	80	40	30	20	17	15	12	10	6	
10	EI7BA	160	80	40	30	20	17	15	12	10	6	
10	EI9FBB	160	80	40	30	20	17	15	12	10	6	
9	EI6IZ	160	80	40	30	20	17	15	12	10		
9	EI9JF	160	80	40	30	20	17	15	12	10		
8	EI1DG		80	40	30	20	17	15	12	10		
8	EI7GY		80	40	30	20	17	15	12	10		
8	EI8IU		80	40	30	20	17	15	12	10		
8	EI9FVB		80	40	30	20	17	15	12	10		
7	EI4BZ		80	40	30	20	17	15	12			
7	EI8GS		80	40		20	17	15	12	10		
6	EI3CTB			40	30	20	17	15	12			
6	EI7JZ			40		20	17	15	12	10		
6	EI9HX			40		20	17	15	12	10		
5	EI4CF			40		20	17	15	12			
5	EI4GJB					20	17	15	12	10		
5	EI4HH					20	17	15	12	10		
5	EI6AL					20	17	15	12	10		
5	EI6JK			40		20		15	12	10		
5	EI8IQ		80			20		15		10	6	
5	EI9E		80	40		20		15	12			
5	EI9GLB					20	17	15	12	10		
3	EI4GK					20		15	12			
3	EI4GNB					20		15	12			
3	EI5EV					20		15	12			
3	EI6FM					20		15	12			
3	EI6HB					20		15	12			
3	EI7GL			40					12		6	
3	EI8JX			40		20		15				
3	EI9CN					20	17	15				
3	EI9HQ					20		15	12			
2	EI2IH					20			12			
2	EI5IF					20		15				
2	EI6GI			40		20						
2	EI7IG					20		15				
2	EI7JN					20		15				
2	EI9KF			40		20						
1	EI3EBB										6	
1	EI3HA					20						
1	EI5FQB					20						
1	EI5GSB					20						
1	EI5KO					20						
1.	EI6S		80									
1	EI7BMB										6	
1	EI9CJ									10		



# **EI call signs in ARRL's DXCC Listings - Compiled by Joe Ryan EI7GY**

as at 2nd March 2020

Entries in Bold Type show changes since 7th January 2020

<b>Mixed</b>		<b>CW</b>		<b>80m</b>						<b>DXCC Honor Roll</b>		
357	EI6S	293	EI4CF	310	EI6S	168	EI6AL	109	EI7JN	<b>Mixed</b> 340 EI6FR/349 340 EI7BA/346 339 EI7CC/354 338 EI8EM/347 337 EI6S/357 333 EI9FBB/336		
354	EI7CC	287	EI2JD	301	EI7BA	168	EI7GY	108	EI4DQ			
349	EI6FR	258	EI6AL	244	EI9FBB	<b>162 EI5KO (+34)</b>		107	EI5IF			
347	EI8EM	255	EI4BZ	223	EI6FR	161	EI6JK	106	EI5EV			
346	EI7BA	242	EI5GM	171	EI2JD	154	EI4HH	105	EI9HQ	<b>Phone</b> 338 EI7BA/344 338 EI8EM/347 336 EI6S/354 334 EI6FR/342		
336	EI9FBB	242	EI5GM	163	EI9JF	<b>152 EI9CN (+1)</b>		104	EI4GK			
334	EI3IO			151	EI3IO	147	EI3CTB	104	EI7IG			
331	EI5GM			145	EI6IZ	145	EI6HB					
330	EI9O	<b>Phone</b>		141	EI9E	<b>142 EI6GI (+2)</b>		<b>12m</b>		<b>CW</b> 338 EI6FR/344 335 EI7BA/340		
328	EI9JF	354	EI6S	135	EI2GLB	139	EI9HQ	326	EI7BA			
324	EI2GLB	352	EI7CC	135	EI4BZ	133	EI5FQB	282	EI9FBB			
320	EI4II	344	EI7BA	112	EI7GY	133	EI5IF	227	EI8IU			
314	EI8IU	342	EI6FR	110	EI8GS	130	EI3GV	206	EI9FVB	<b>DXCC Challenge</b>  2932 EI7BA 2534 EI9FBB 2364 EI6FR 1964 EI3IO 1918 EI9JF 1854 EI2GLB 1840 EI6IZ 1806 EI8IU 1783 EI7CC 1766 EI2JD 1531 EI9FVB 1466 EI4CF <b>1332 EI1DG (+20)</b> 1317 EI4BZ 1310 EI8GS 1205 EI7JZ 1201 EI7GY 1093 EI6AL 1092 EI5GM 1090 EI6JK 1078 EI4DQ 1060 EI9HX		
312	EI6IZ	324	EI9FBB	107	EI8IU	129	EI4GNB	203	EI6FR			
312	EI8FH	307	EI3IO	106	EI4DQ	<b>128 EI5KO (New)</b>		170	EI6AL			
306	EI2HY	306	EI9HX	<b>105 EI1DG (+3)</b>		126	EI3HA	168	EI2GLB			
306	EI2HY	300	EI4GK	103	EI8IQ	115	EI7IG	164	EI6IZ	<b>Phone</b> 338 EI7BA/344 338 EI8EM/347 336 EI6S/354 334 EI6FR/342		
306	EI4CF	299	EI8GS	100	EI9FVB	113	EI4GK	163	EI9JF			
304	EI2JD	292	EI2GLB			112	EI8IQ	151	EI2JD			
303	EI2CR	292	EI9JF			109	EI4DQ	140	EI6JK			
302	EI7JZ	291	EI9FVB			105	EI2II	139	EI7JZ	<b>DXCC Honor Roll</b>  <b>Mixed</b> 336 EI8H/365 331 EI2GS/340  <b>CW</b> 109 EI4HM  <b>PHONE</b> 338 EI2GS 331 EI8AR 309 EI3GV 300 EI8AU 116 EI6CPB 114 EI4EX  <b>DXCC</b>  <b>Mixed</b> 365 EI8H 340 EI2GS 116 EI6CPB		
300	EI8GS	290	EI7JZ	320	EI7BA	104	EI5EV	<b>138 EI1DG (+1)</b>	128			EI3IO
300	EI9FVB	285	EI8IU	279	EI9JF	104	EI9KF	118	EI7GY			
279	EI9GLB	284	EI2JD	271	EI6FR	102	EI5GSB	110	EI9HX			
275	EI4BZ	279	EI9GLB	258	EI9FBB			109	EI8GS	<b>The following Silent Keys were Holders of DXCC Awards</b>  <b>DXCC Honor Roll</b>  <b>Mixed</b> 336 EI8H/365 331 EI2GS/340  <b>CW</b> 109 EI4HM  <b>PHONE</b> 338 EI2GS 331 EI8AR 309 EI3GV 300 EI8AU 116 EI6CPB 114 EI4EX  <b>DXCC</b>  <b>Mixed</b> 365 EI8H 340 EI2GS 116 EI6CPB		
274	EI6AL	275	EI4CF	216	EI6IZ	<b>17m</b>		103	EI9GLB			
263	EI5JQ	249	EI5GUB	209	EI4CF	335	EI7BA	100	EI4GJB			
262	EI2GX	241	EI6JK	208	EI2GLB	316	EI6FR	100	EI4HH			
251	EI1DG	<b>232 EI6FM (+21)</b>		206	EI2JD	306	EI9FBB			<b>DXCC Challenge</b>  2932 EI7BA 2534 EI9FBB 2364 EI6FR 1964 EI3IO 1918 EI9JF 1854 EI2GLB 1840 EI6IZ 1806 EI8IU 1783 EI7CC 1766 EI2JD 1531 EI9FVB 1466 EI4CF <b>1332 EI1DG (+20)</b> 1317 EI4BZ 1310 EI8GS 1205 EI7JZ 1201 EI7GY 1093 EI6AL 1092 EI5GM 1090 EI6JK 1078 EI4DQ 1060 EI9HX		
249	EI4HH	223	EI6AL	202	EI3IO	263	EI8IU					
249	EI5GUB	222	EI4HH	157	EI7JZ	248	EI9JF					
244	EI7GY	222	EI8FH	156	EI4BZ	238	EI6IZ					
<b>243 EI6FM (+28)</b>		218	EI4BZ	154	EI6JK	216	EI2GLB			<b>DXCC Honor Roll</b>  <b>Mixed</b> 336 EI8H/365 331 EI2GS/340  <b>CW</b> 109 EI4HM  <b>PHONE</b> 338 EI2GS 331 EI8AR 309 EI3GV 300 EI8AU 116 EI6CPB 114 EI4EX  <b>DXCC</b>  <b>Mixed</b> 365 EI8H 340 EI2GS 116 EI6CPB		
243	EI6JK	216	EI7GL	150	EI8GS	210	EI9FVB	<b>10m</b>				
230	EI4GXB	215	EI9E	149	EI9E	197	EI2JD	308	EI7BA			
221	EI3CTB	208	EI4GJB	<b>132 EI1DG (+2)</b>		193	EI6AL	284	EI9FBB			
220	EI9E	200	EI6IL	132	EI3CTB	171	EI7GY	262	EI3IO	<b>DXCC Honor Roll</b>  <b>Mixed</b> 336 EI8H/365 331 EI2GS/340  <b>CW</b> 109 EI4HM  <b>PHONE</b> 338 EI2GS 331 EI8AR 309 EI3GV 300 EI8AU 116 EI6CPB 114 EI4EX  <b>DXCC</b>  <b>Mixed</b> 365 EI8H 340 EI2GS 116 EI6CPB		
214	EI5IF	199	EI9CN	128	EI7GY	<b>169 EI1DG (+2)</b>		235	EI6FR			
210	EI6IL	191	EI3HA	128	EI9HX	165	EI7JZ	232	EI2GLB			
209	EI7JN	188	EI2CH	125	EI9FVB	162	EI4CF	215	EI9FVB			
202	EI9CN	186	EI7II	121	EI8JX	155	EI9HX	211	EI8GS	<b>DXCC Honor Roll</b>  <b>Mixed</b> 336 EI8H/365 331 EI2GS/340  <b>CW</b> 109 EI4HM  <b>PHONE</b> 338 EI2GS 331 EI8AR 309 EI3GV 300 EI8AU 116 EI6CPB 114 EI4EX  <b>DXCC</b>  <b>Mixed</b> 365 EI8H 340 EI2GS 116 EI6CPB		
201	EI4IR	186	EI9HQ	119	EI4DQ	148	EI4HH	211	EI8IU			
193	EI3HI	177	EI5IF	117	EI7GL	146	EI3IO	199	EI2JD			
<b>192 EI5EV (+3)</b>		177	EI9FE	<b>110 EI6GI (+4)</b>		141	EI8GS	199	EI4CF			
191	EI6HB	176	EI3CTB	102	EI9KF	139	EI4BZ	188	EI4BZ	<b>DXCC Honor Roll</b>  <b>Mixed</b> 336 EI8H/365 331 EI2GS/340  <b>CW</b> 109 EI4HM  <b>PHONE</b> 338 EI2GS 331 EI8AR 309 EI3GV 300 EI8AU 116 EI6CPB 114 EI4EX  <b>DXCC</b>  <b>Mixed</b> 365 EI8H 340 EI2GS 116 EI6CPB		
189	EI9HQ	162	EI5FQB			127	EI4GJB	182	EI6AL			
175	EI7IG	160	EI2II			121	EI9GLB	180	EI4HH			
<b>172 EI5KO (+35)</b>		157	EI4GNB			114	EI3CTB	<b>179 EI1DG (+5)</b>				
170	EI4GNB	160	EI6HB			<b>106 EI9CN (+3)</b>		177	EI9E	<b>DXCC Honor Roll</b>  <b>Mixed</b> 336 EI8H/365 331 EI2GS/340  <b>CW</b> 109 EI4HM  <b>PHONE</b> 338 EI2GS 331 EI8AR 309 EI3GV 300 EI8AU 116 EI6CPB 114 EI4EX  <b>DXCC</b>  <b>Mixed</b> 365 EI8H 340 EI2GS 116 EI6CPB		
<b>165 EI6GI (+2)</b>		131	EI5GSB			105	EI4DQ	173	EI6JK			
162	EI5FQB	108	EI8JK					170	EI6IZ			
160	EI4GZB	<b>106 EI1DG (+1)</b>						168	EI7JZ			
135	EI9CF	103	EI3HDB					150	EI9JF	<b>DXCC Honor Roll</b>  <b>Mixed</b> 336 EI8H/365 331 EI2GS/340  <b>CW</b> 109 EI4HM  <b>PHONE</b> 338 EI2GS 331 EI8AR 309 EI3GV 300 EI8AU 116 EI6CPB 114 EI4EX  <b>DXCC</b>  <b>Mixed</b> 365 EI8H 340 EI2GS 116 EI6CPB		
134	EI9KF	103	EI6GGB					<b>147 EI6FM (+7)</b>				
131	EI5GSB	102	EI4DJB					144	EI7GL			
128	EI8HA	102	EI3IP					140	EI6FM			
127	EI9CJ	101	EI3GAB					136	EI4GK	<b>DXCC Honor Roll</b>  <b>Mixed</b> 336 EI8H/365 331 EI2GS/340  <b>CW</b> 109 EI4HM  <b>PHONE</b> 338 EI2GS 331 EI8AR 309 EI3GV 300 EI8AU 116 EI6CPB 114 EI4EX  <b>DXCC</b>  <b>Mixed</b> 365 EI8H 340 EI2GS 116 EI6CPB		
121	EI8JK	100	EI3GAB					135	EI7GY			
<b>109 EI100YXQ (NEW)</b>								133	EI8IQ			
108	EI4DG							128	EI3CTB			
104	EI9GWB							125	EI9GLB	<b>DXCC Honor Roll</b>  <b>Mixed</b> 336 EI8H/365 331 EI2GS/340  <b>CW</b> 109 EI4HM  <b>PHONE</b> 338 EI2GS 331 EI8AR 309 EI3GV 300 EI8AU 116 EI6CPB 114 EI4EX  <b>DXCC</b>  <b>Mixed</b> 365 EI8H 340 EI2GS 116 EI6CPB		
103	EI3HDB							123	EI4GNB			
101	EI2KJ							116	EI9HQ			
101	EI7JQ							112	EI4GJB			
101	EI8JB							111	EI9CJ	<b>DXCC Honor Roll</b>  <b>Mixed</b> 336 EI8H/365 331 EI2GS/340  <b>CW</b> 109 EI4HM  <b>PHONE</b> 338 EI2GS 331 EI8AR 309 EI3GV 300 EI8AU 116 EI6CPB 114 EI4EX  <b>DXCC</b>  <b>Mixed</b> 365 EI8H 340 EI2GS 116 EI6CPB		
100	EI3GAB							111	EI9HX			
100	EI4HQ							108	EI5EV			
100	EI8KF							105	EI6HB			
100	EI9GGB							102	EI4DQ	<b>DXCC Honor Roll</b>  <b>Mixed</b> 336 EI8H/365 331 EI2GS/340  <b>CW</b> 109 EI4HM  <b>PHONE</b> 338 EI2GS 331 EI8AR 309 EI3GV 300 EI8AU 116 EI6CPB 114 EI4EX  <b>DXCC</b>  <b>Mixed</b> 365 EI8H 340 EI2GS 116 EI6CPB		
								101	EI2II			
										<b>DXCC Honor Roll</b>  <b>Mixed</b> 336 EI8H/365 331 EI2GS/340  <b>CW</b> 109 EI4HM  <b>PHONE</b> 338 EI2GS 331 EI8AR 309 EI3GV 300 EI8AU 116 EI6CPB 114 EI4EX  <b>DXCC</b>  <b>Mixed</b> 365 EI8H 340 EI2GS 116 EI6CPB		
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										<b>DXCC Honor Roll</b>  <b>Mixed</b> 336 EI8H/365 331 EI2GS/340  <b>CW</b> 109 EI4HM  <b>PHONE</b> 338 EI2GS 331 EI8AR 309 EI3GV 300 EI8AU 116 EI6CPB 114 EI4EX  <b>DXCC</b>  <b>Mixed</b> 365 EI8H 340 EI2GS 116 EI6CPB		
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X-300N	6.5/9 db	€125
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6.7dB Gain	: Max Power - 200W	: Wind Rating - 112
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**Tony Murtagh EI3GU Contact: Mobile 086 2322454**  
**Items for Sale Manuals for all except the Versa Tuner**

MFJ-748 Tunable DSP Filter	€140
Kenwood Station Monitor SM-230	€530
AEA TNC - 900	€105
Alinco VHF TX DR- 130	€80
Icom Handheld VHF tx IC-02AT + charger/headset	€50
Yaesu Dynamic Mic MD-1DB	€65
Watson Regulated DC PSUW-30AM	€60
AEA TNC PK-232	€40
MFJ Versa Tuner MFJ-941C	€85
Yaesu VHF tx CPU-2500R	€70
Toyo SWR/Power meter YM-1X	€20
Sony Speaker System SRS A201	€20
Creative Web Cam	€30

**John Ronan EI7IG Contact: Mobile 086 8167310**  
**Items for Sale**

Yaesu FT-900AT 160m-10m Built in ATU (AREN)	€300
Signalink USB, Yaesu Lead, Elecraft K3 Lead, SLMOD8RK, SLMODK3	€80
Garmin GPS18-PC	€50
Opentrac Tracker2 APRS Data Modem	€50
Argendata T3-9670 data Modems (3)	€100
AOR AS5000 Antenna Switch	€80
MJF-452 CW Keyboard/Keyer	€80

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**Items for Sale**

Yaesu FT2000. 200 watt output, 180m to 6m, with matching speaker, as new, boxed + manual	€1600
Bearcat 800 scanner, as new, boxed + manual.	€180